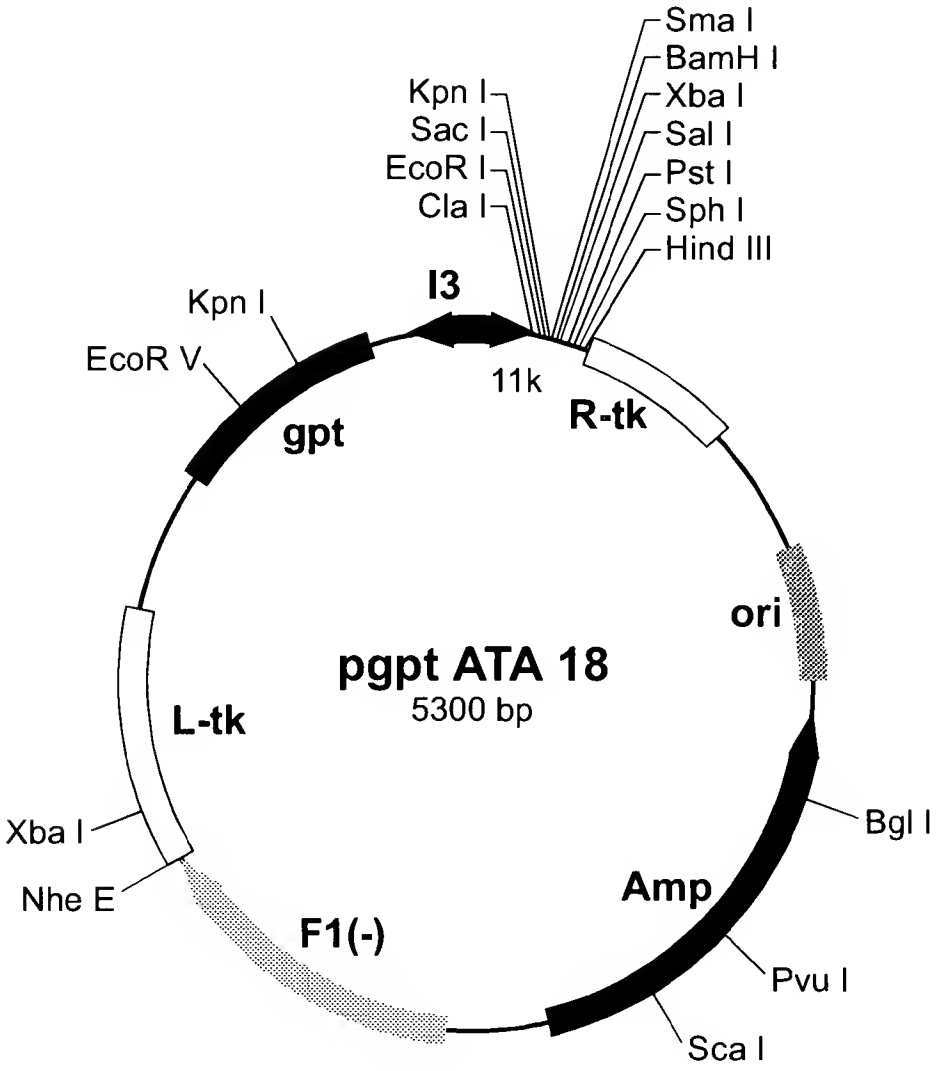

Figure 1

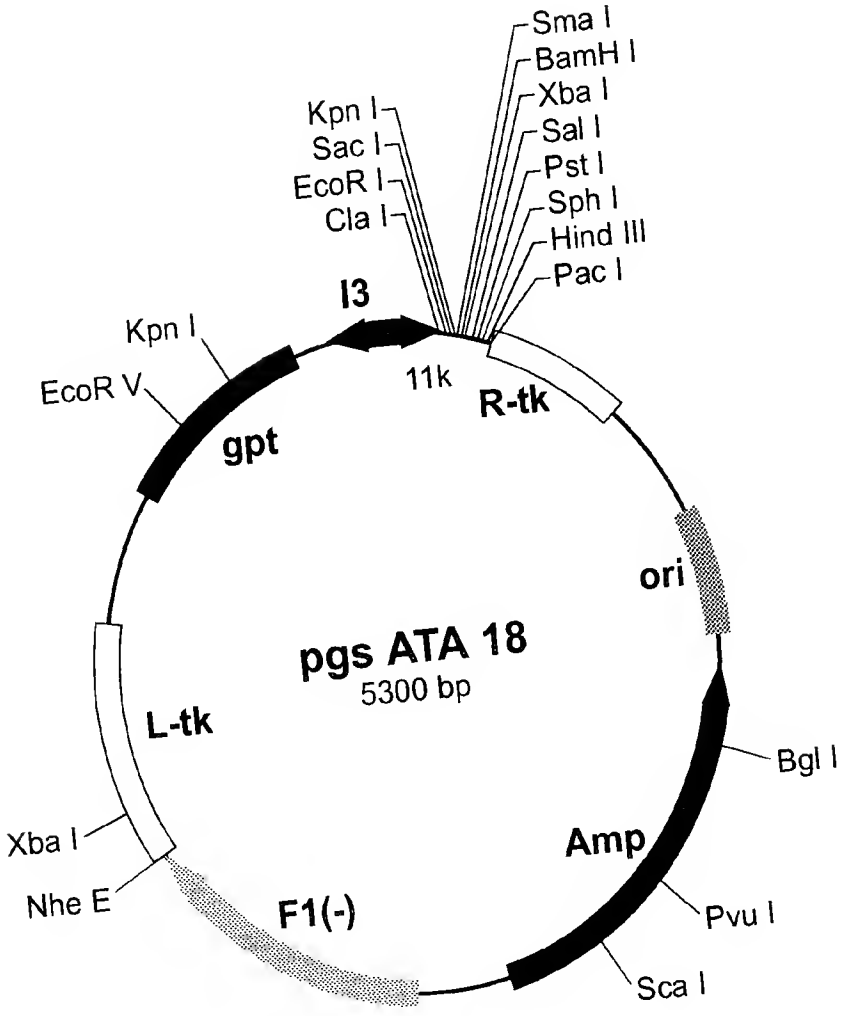

Figure 2

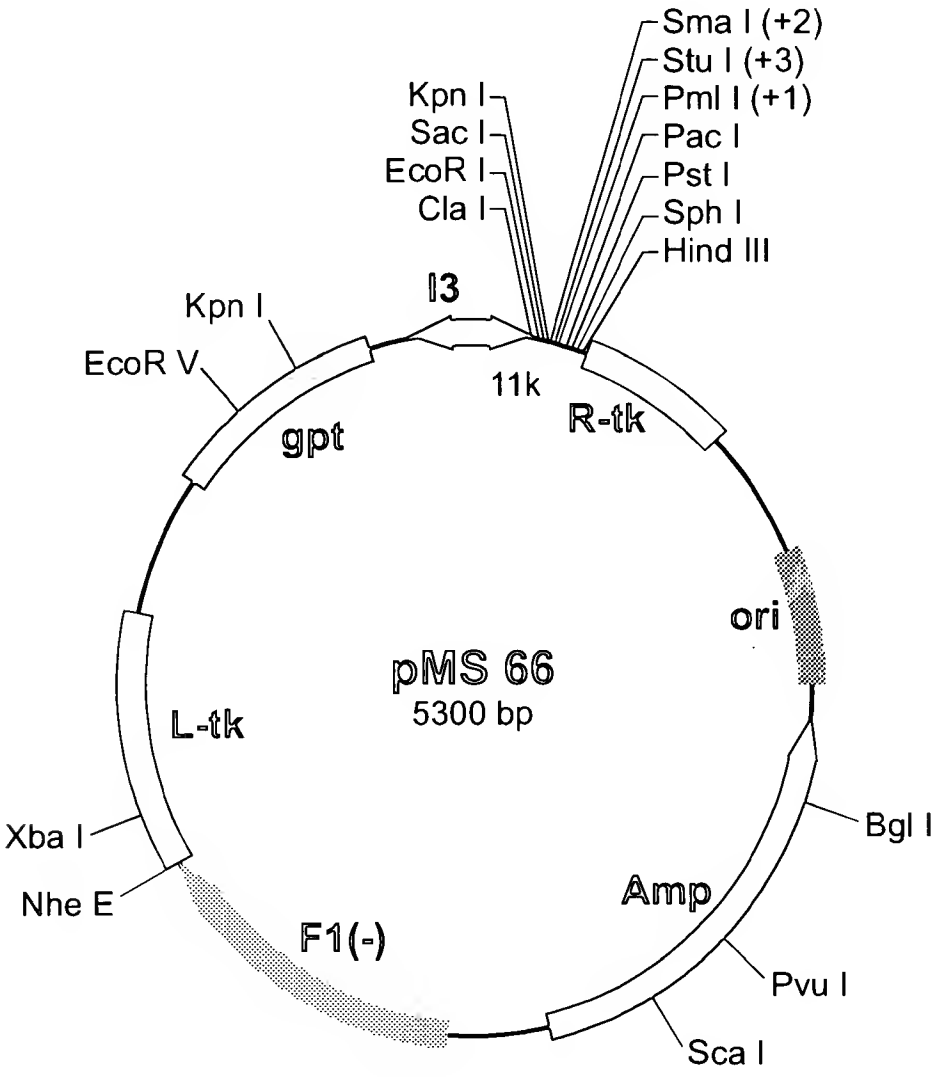

Figure 3

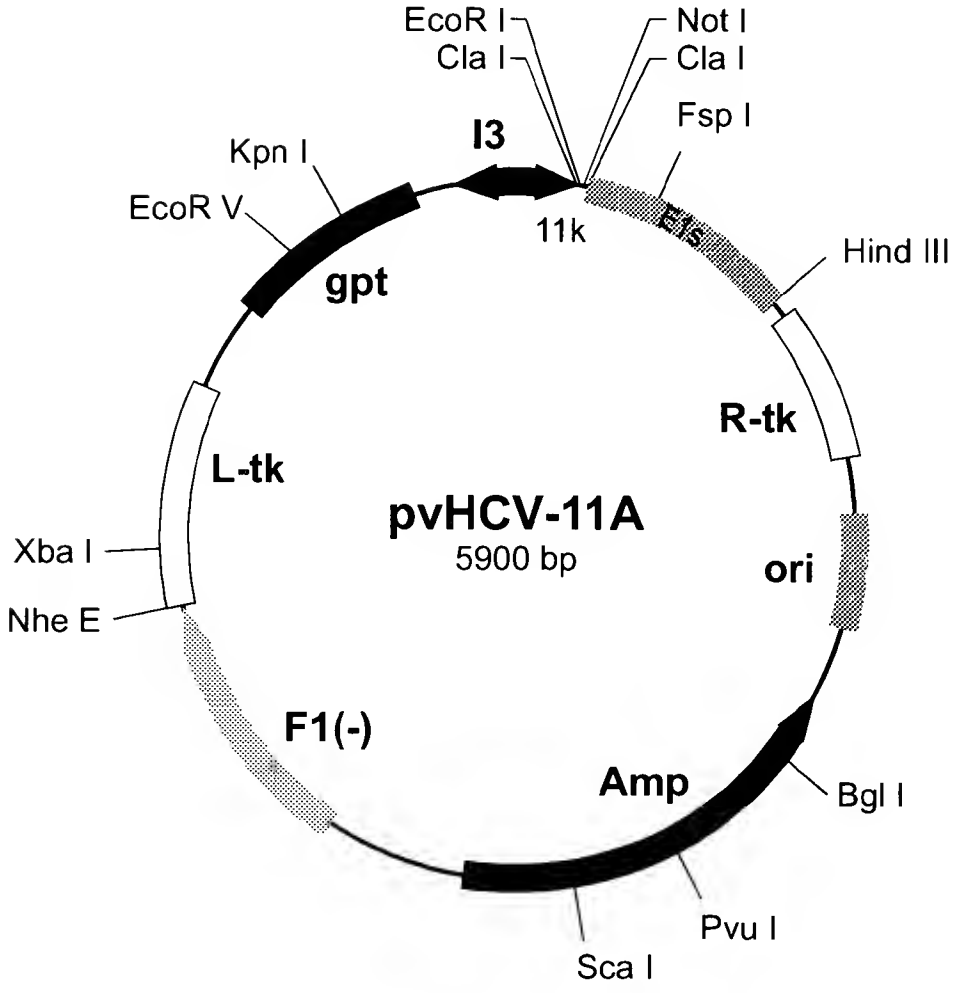

Figure 4

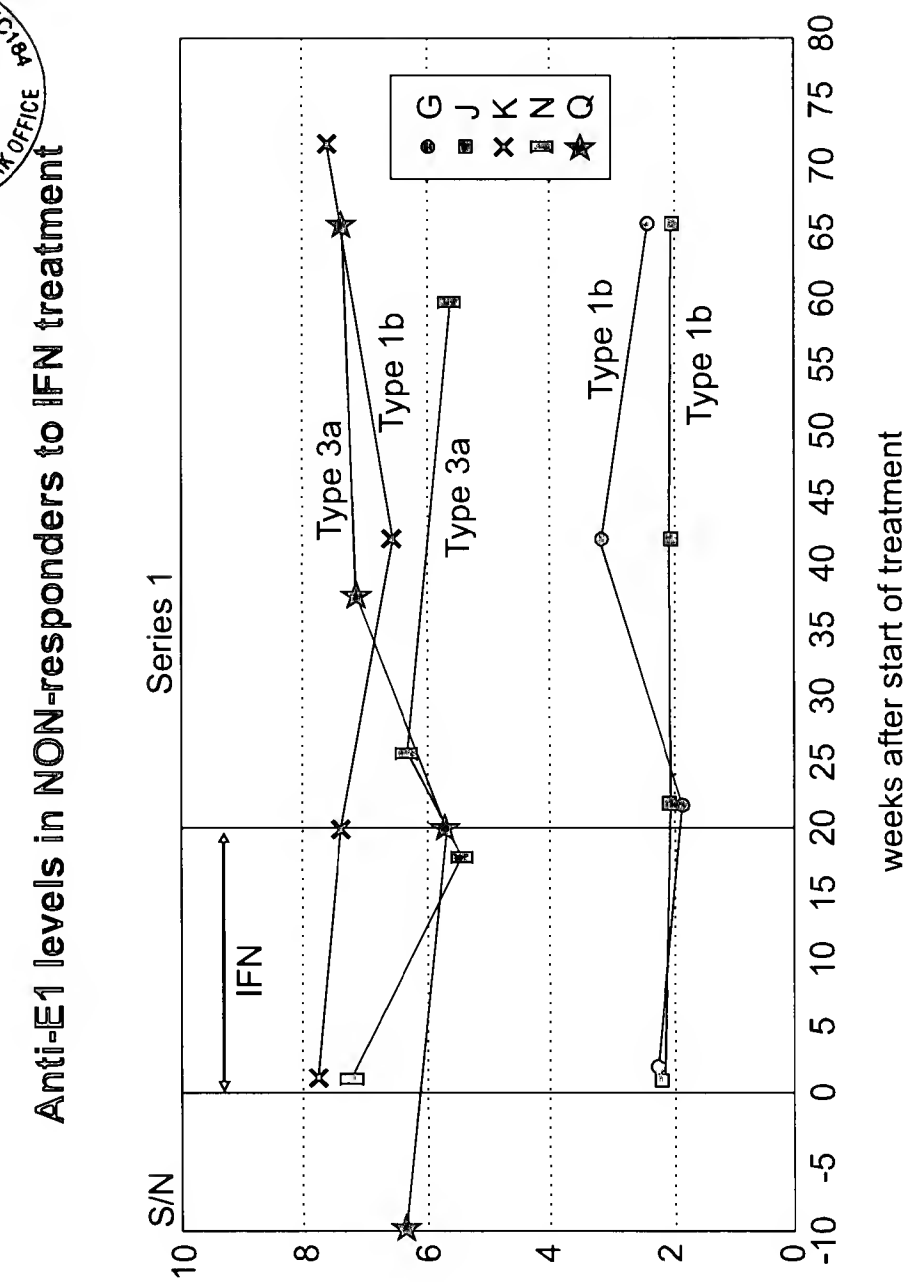

Figure 5

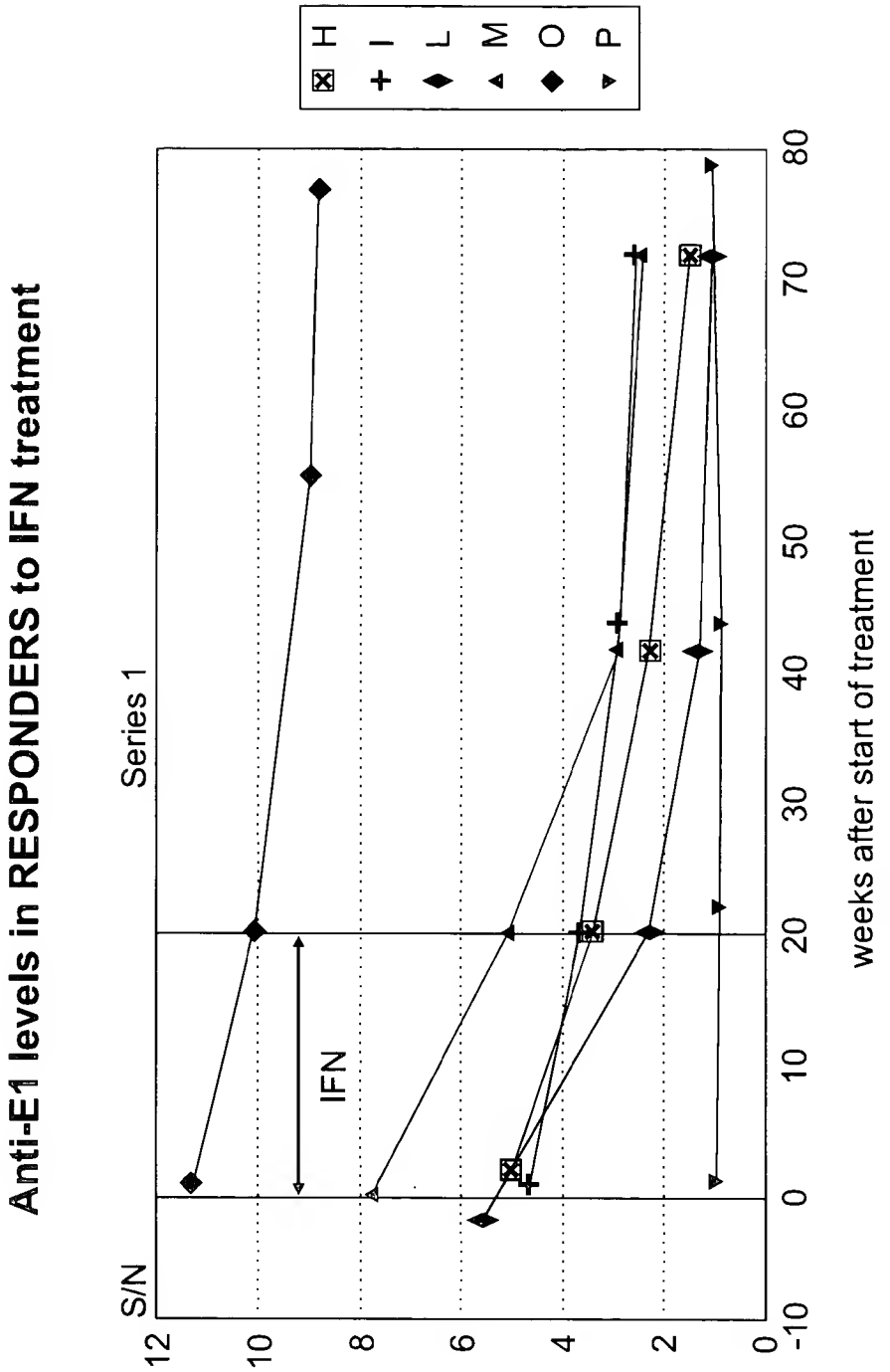

Figure 6

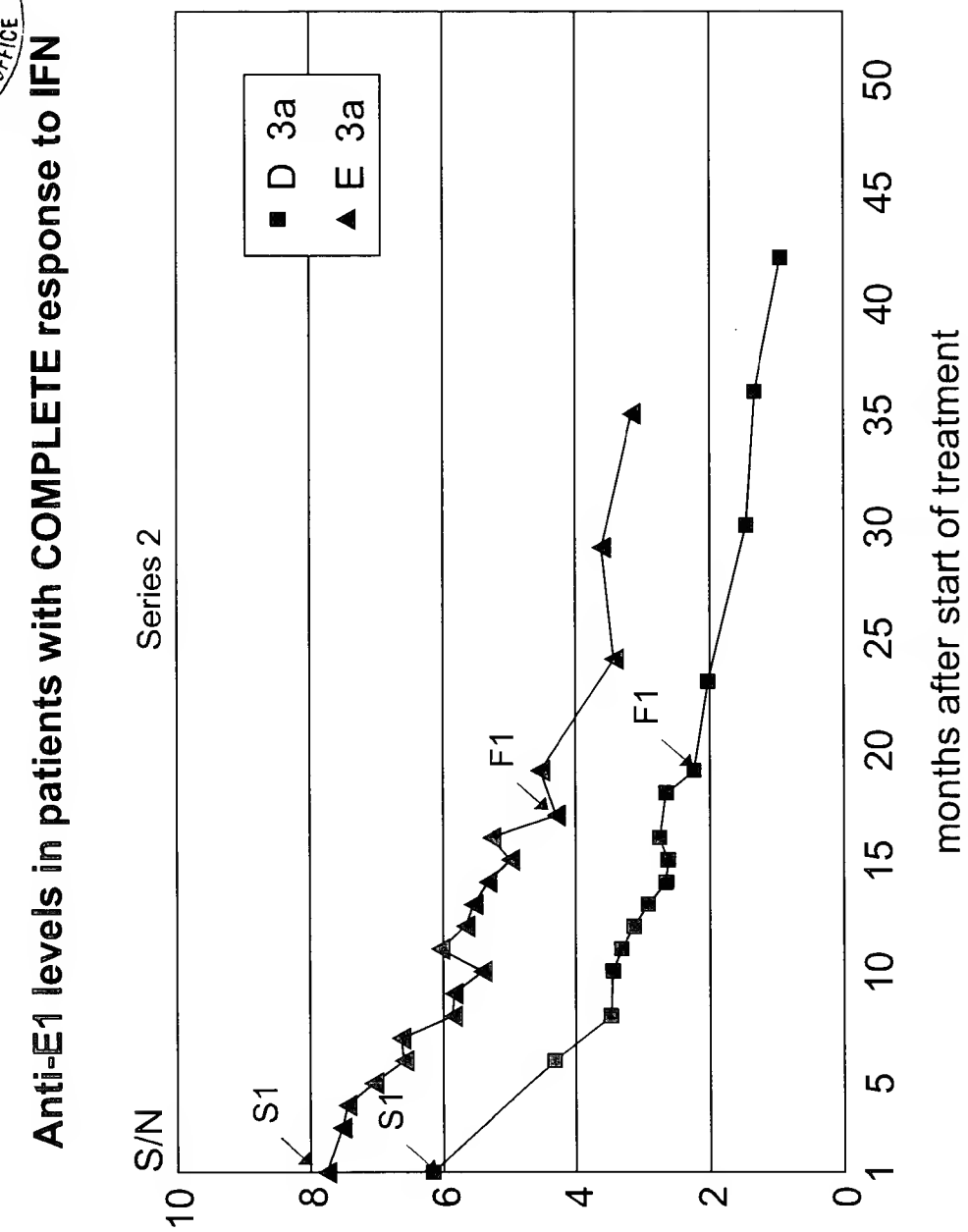

Figure 7

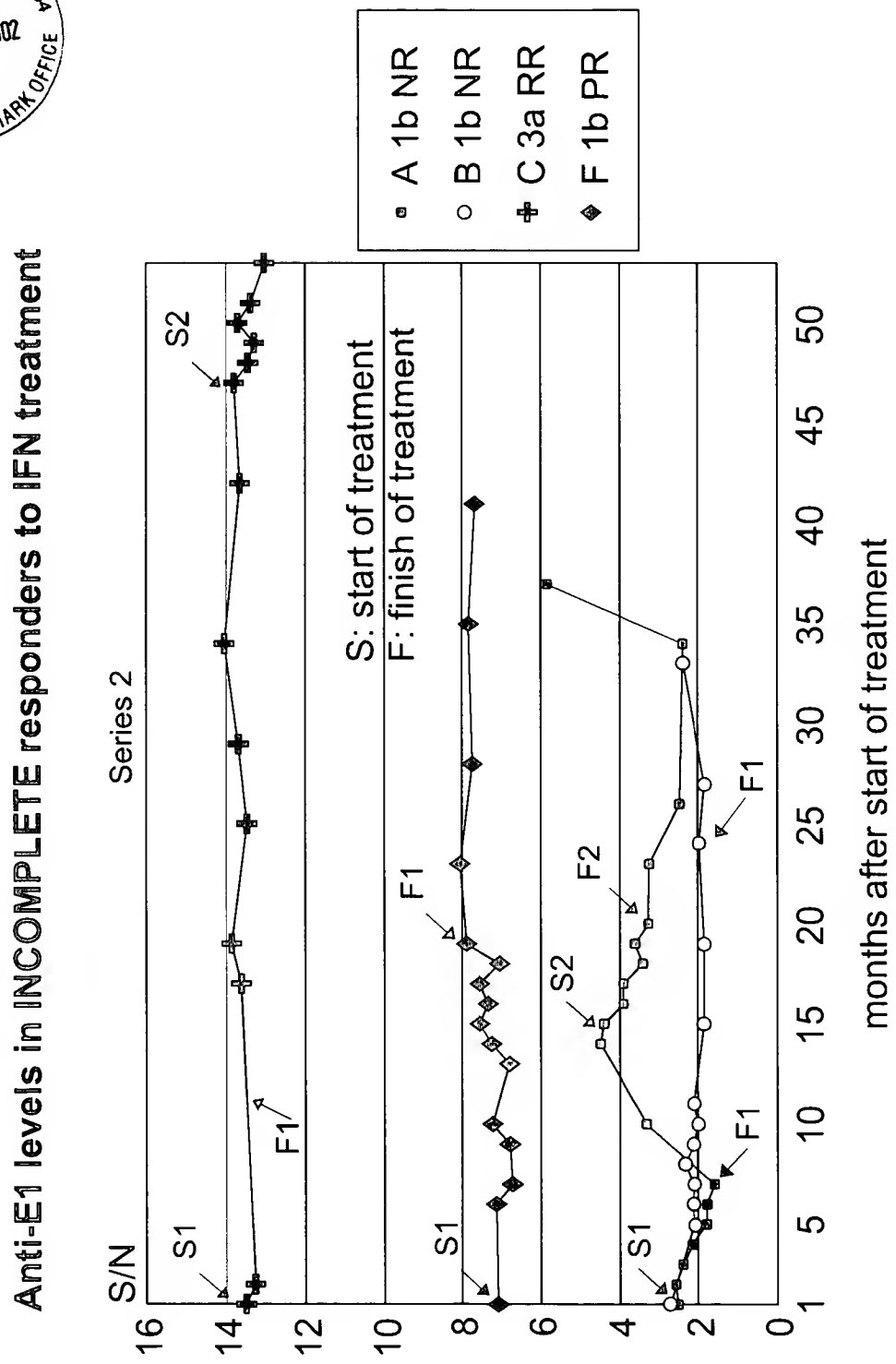

Figure 8

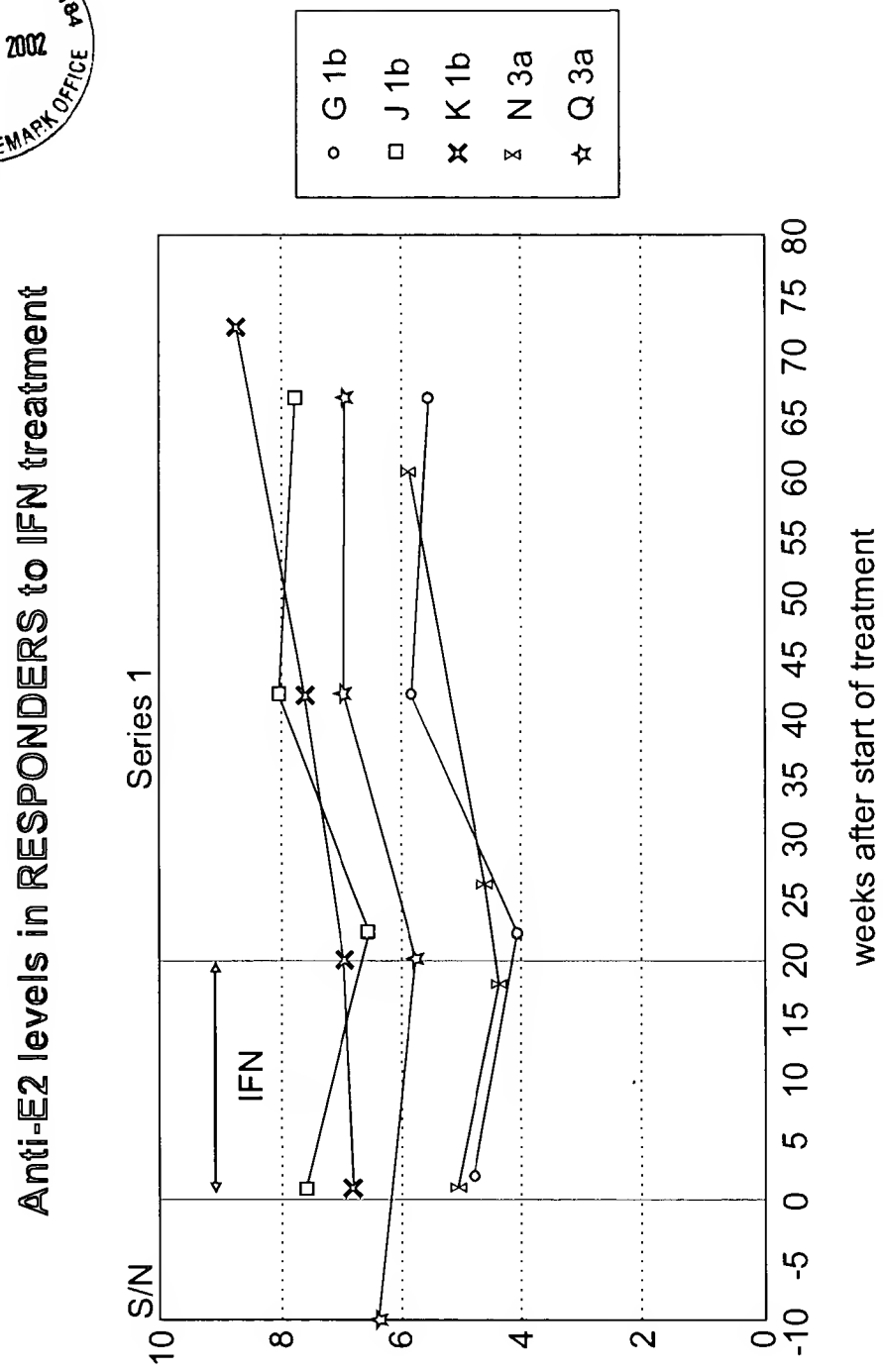

Figure 9

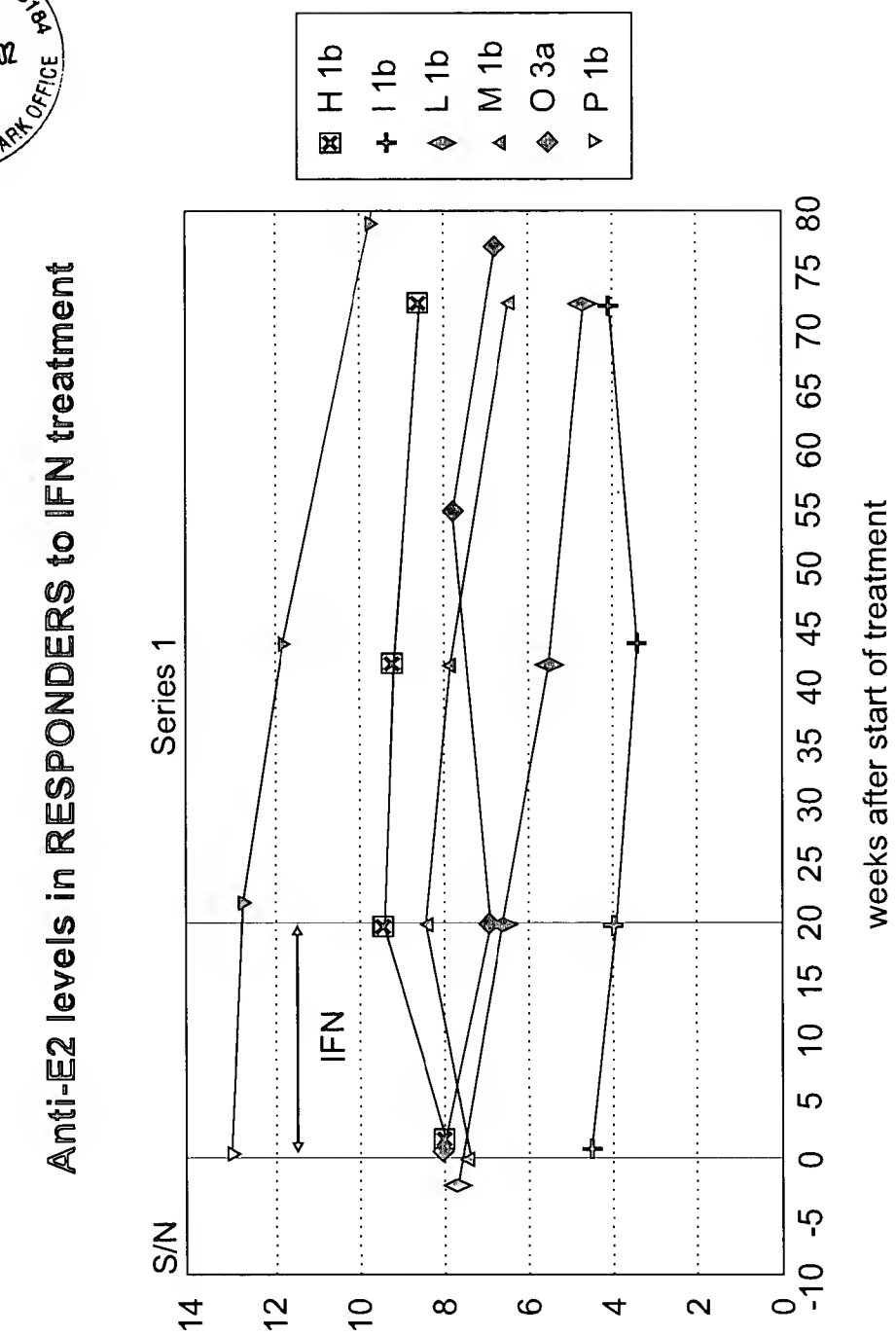

Figure 10

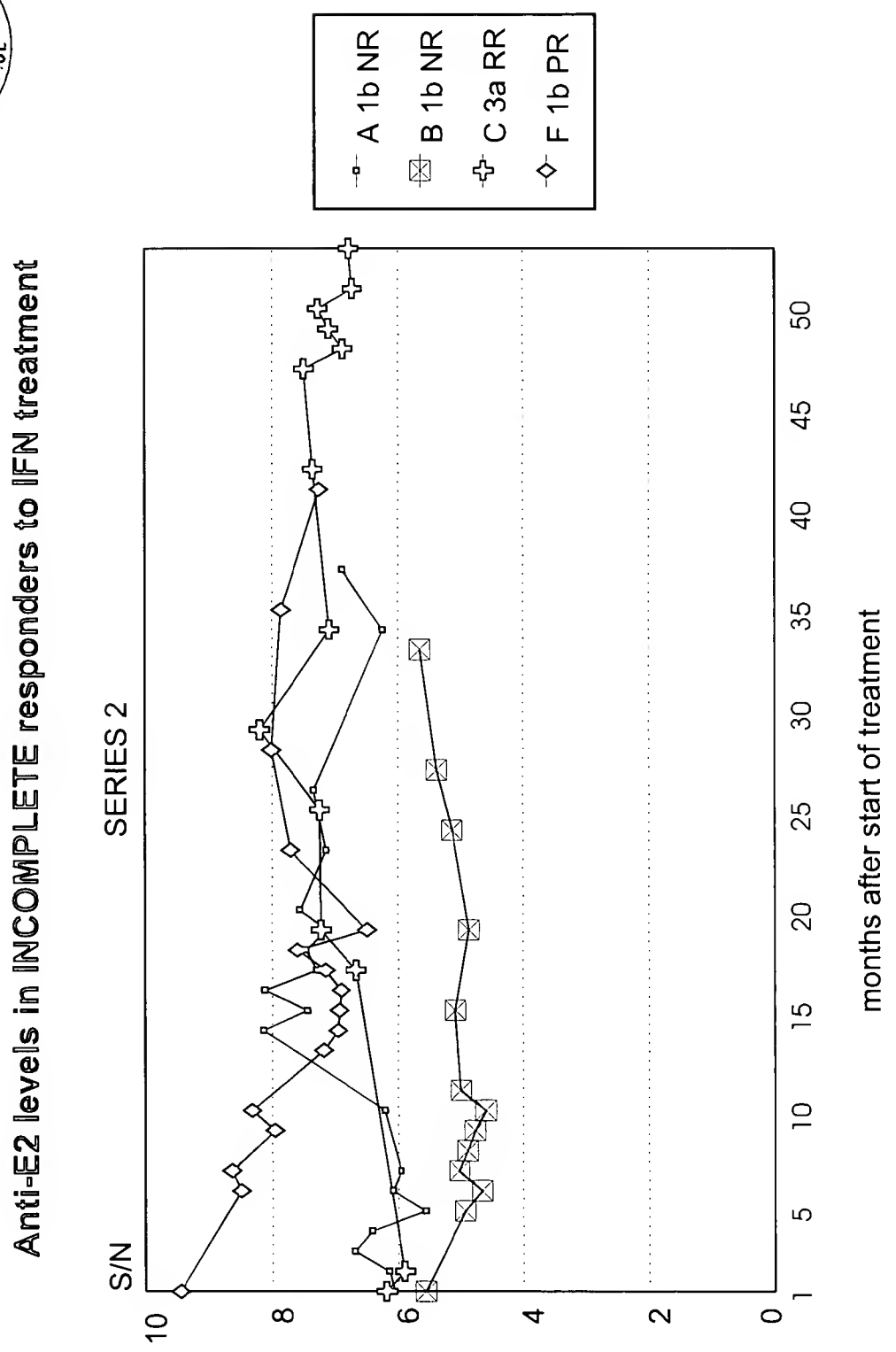

Figure 11

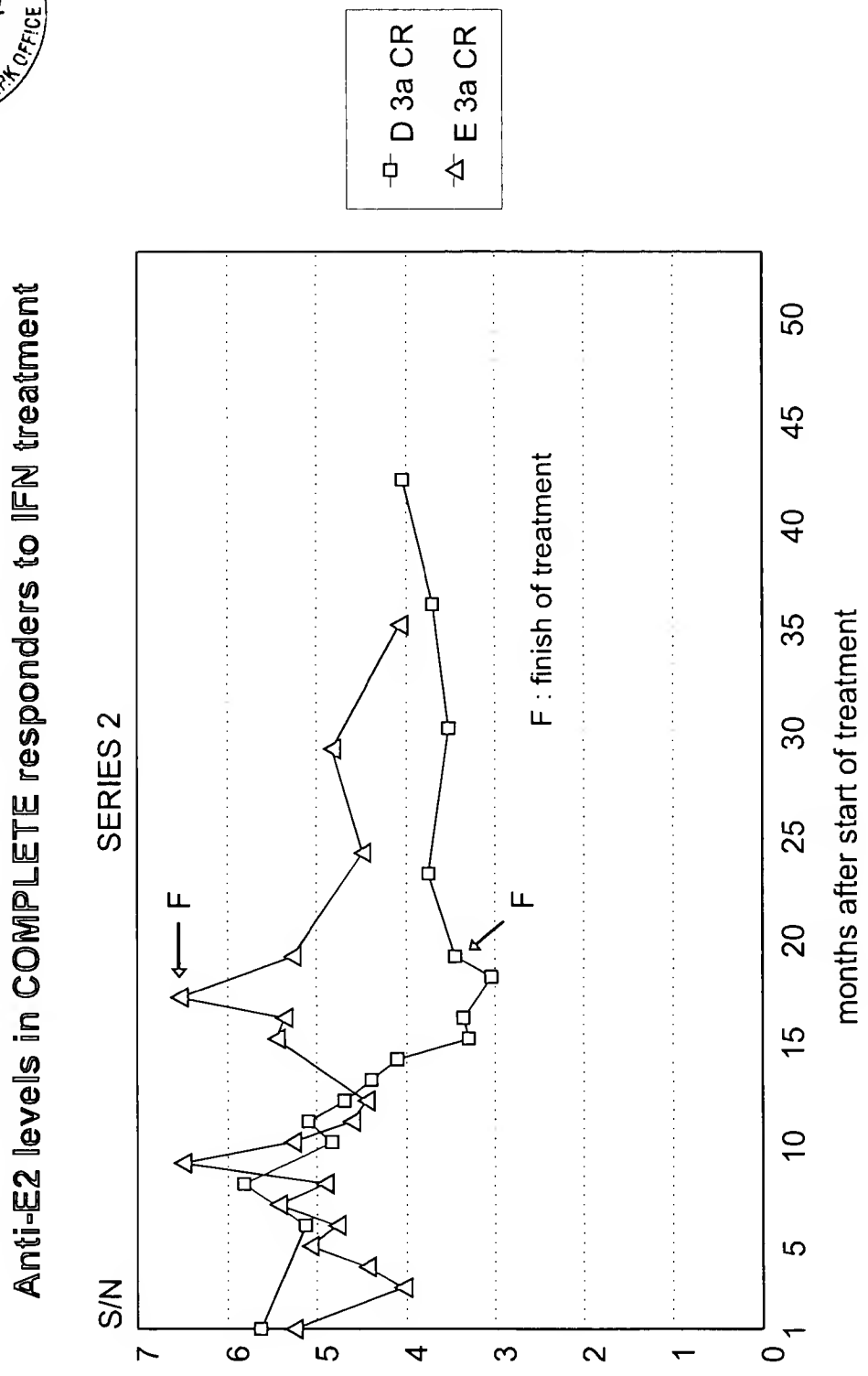

Figure 12

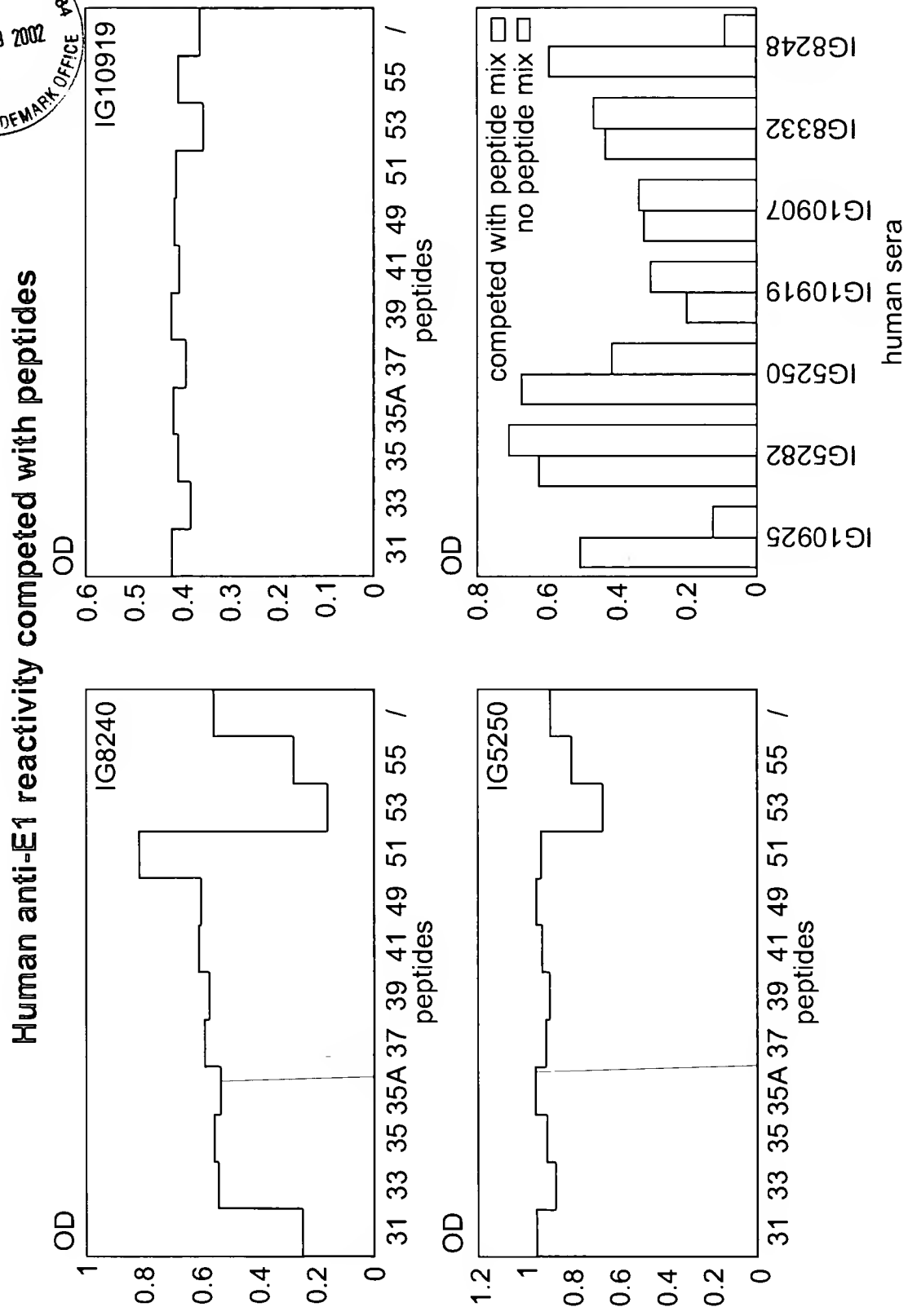

Figure 13

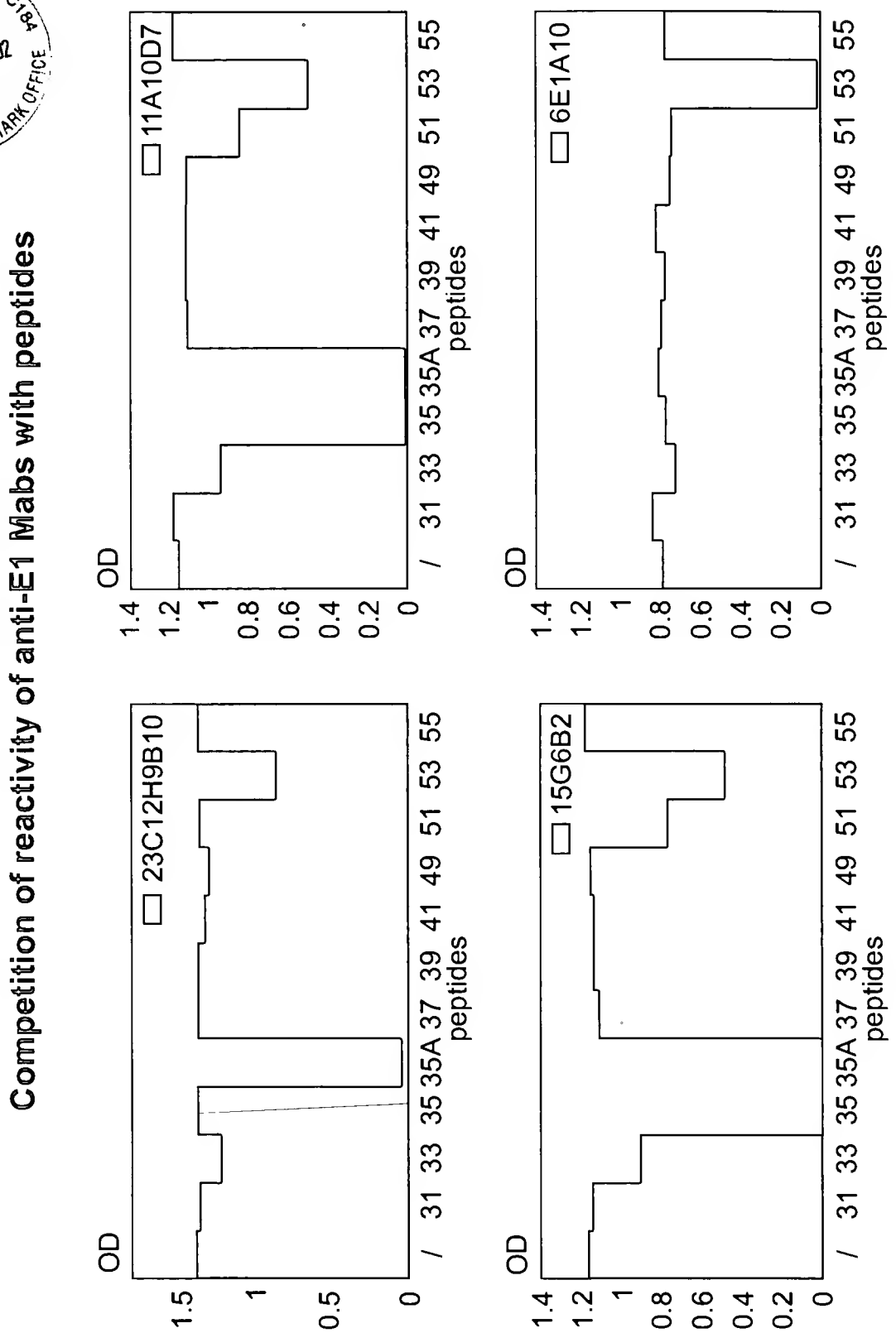

Figure 14

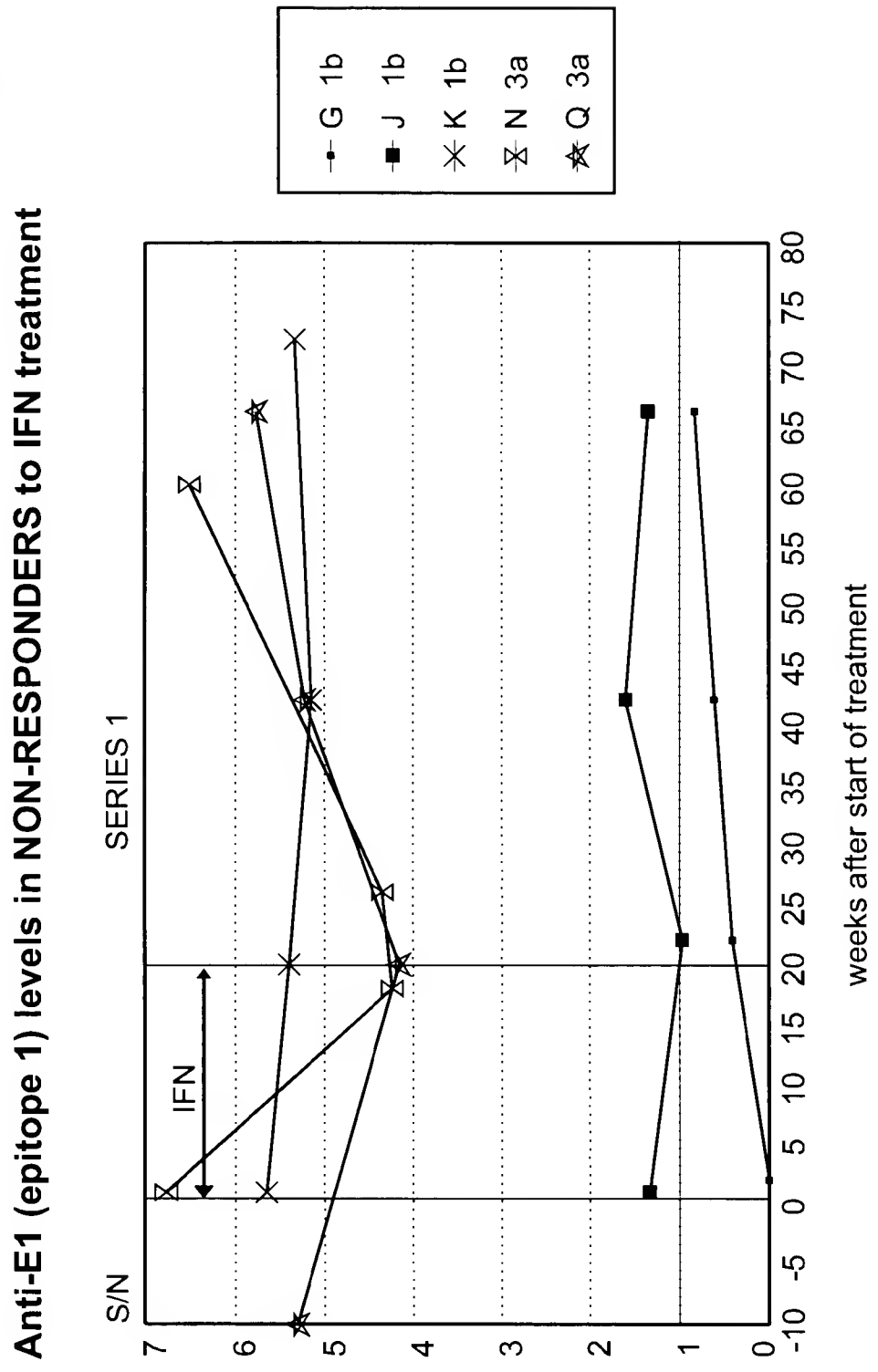

Figure 15

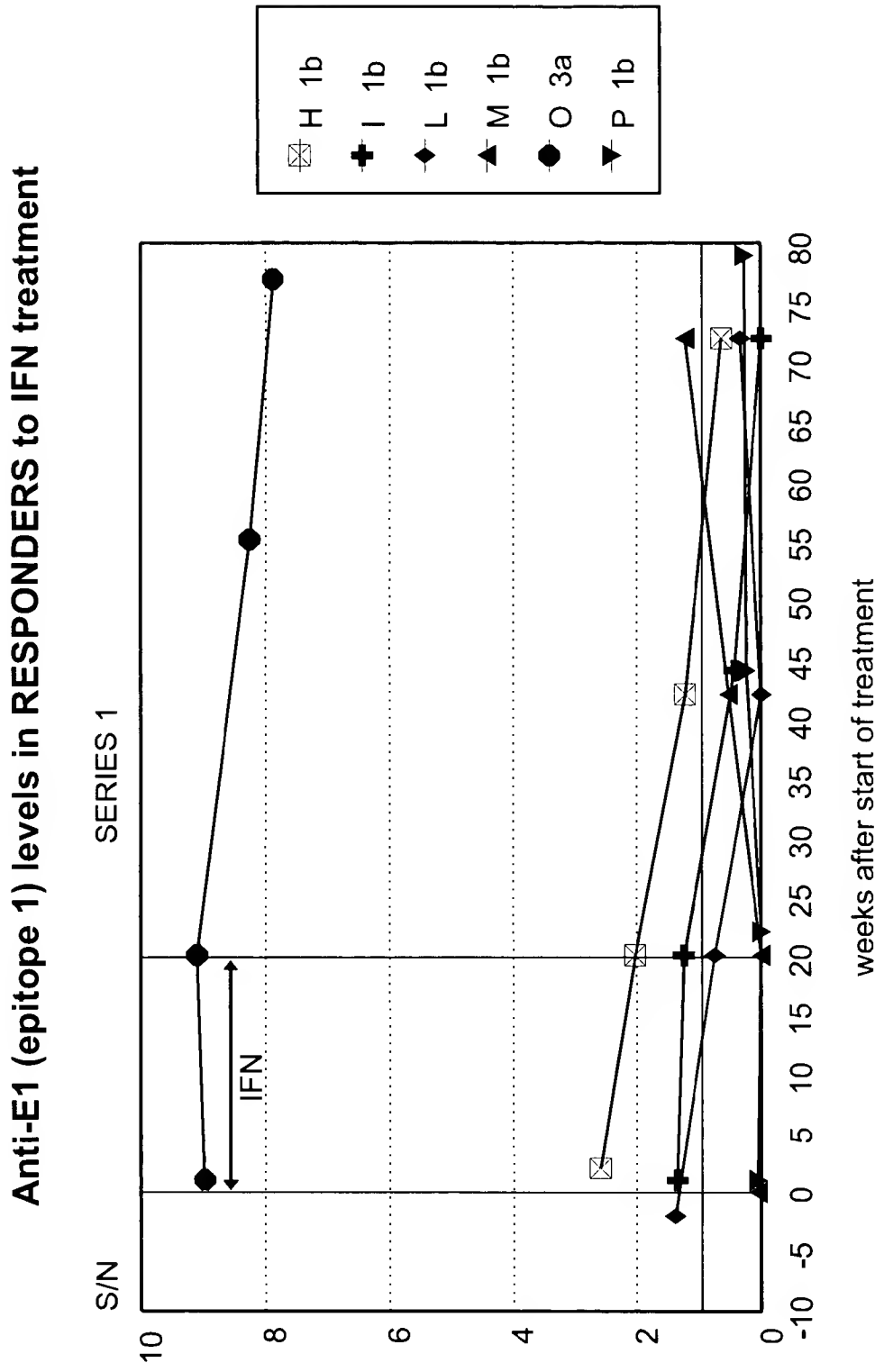

Figure 16

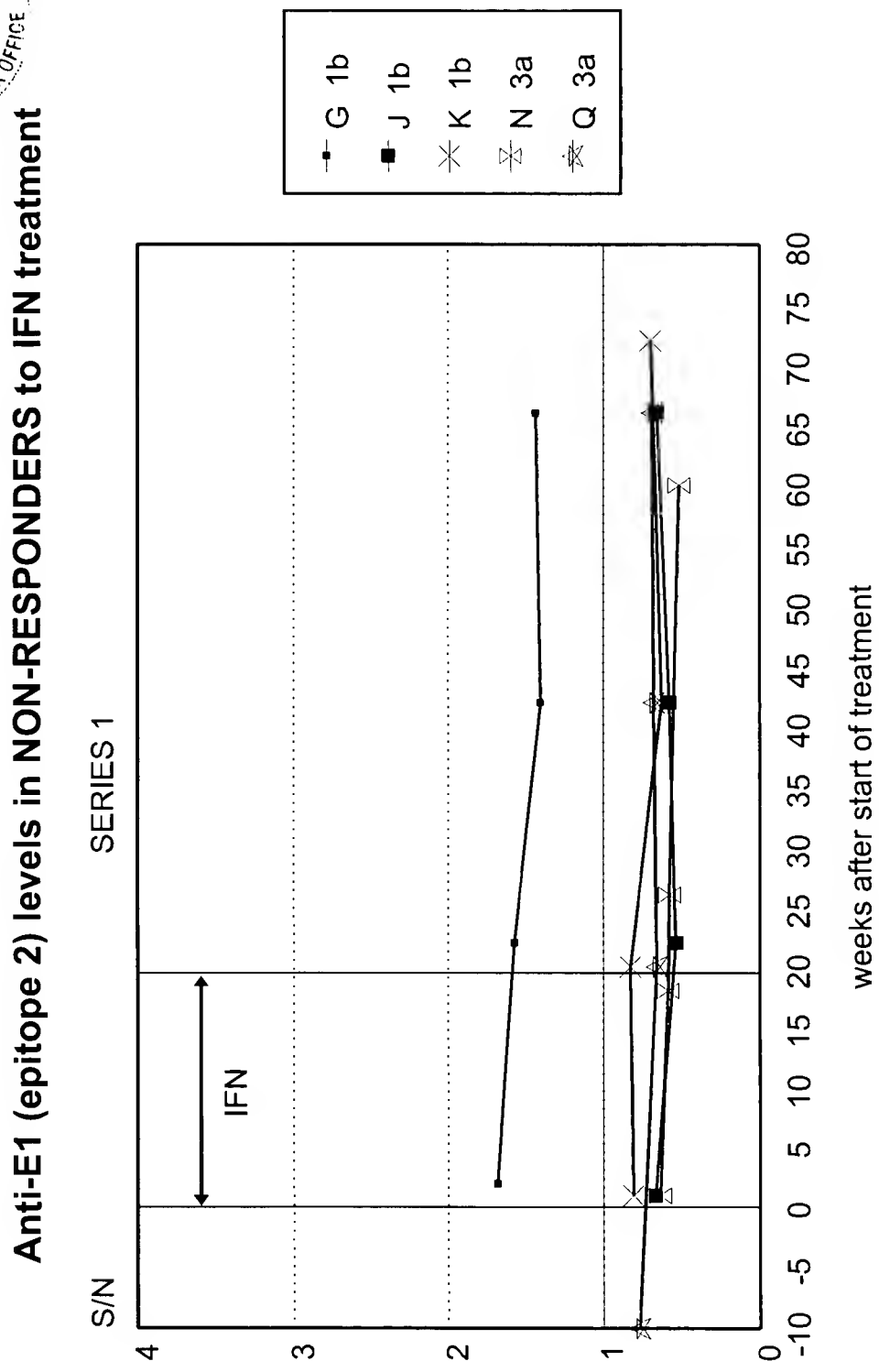

Figure 17

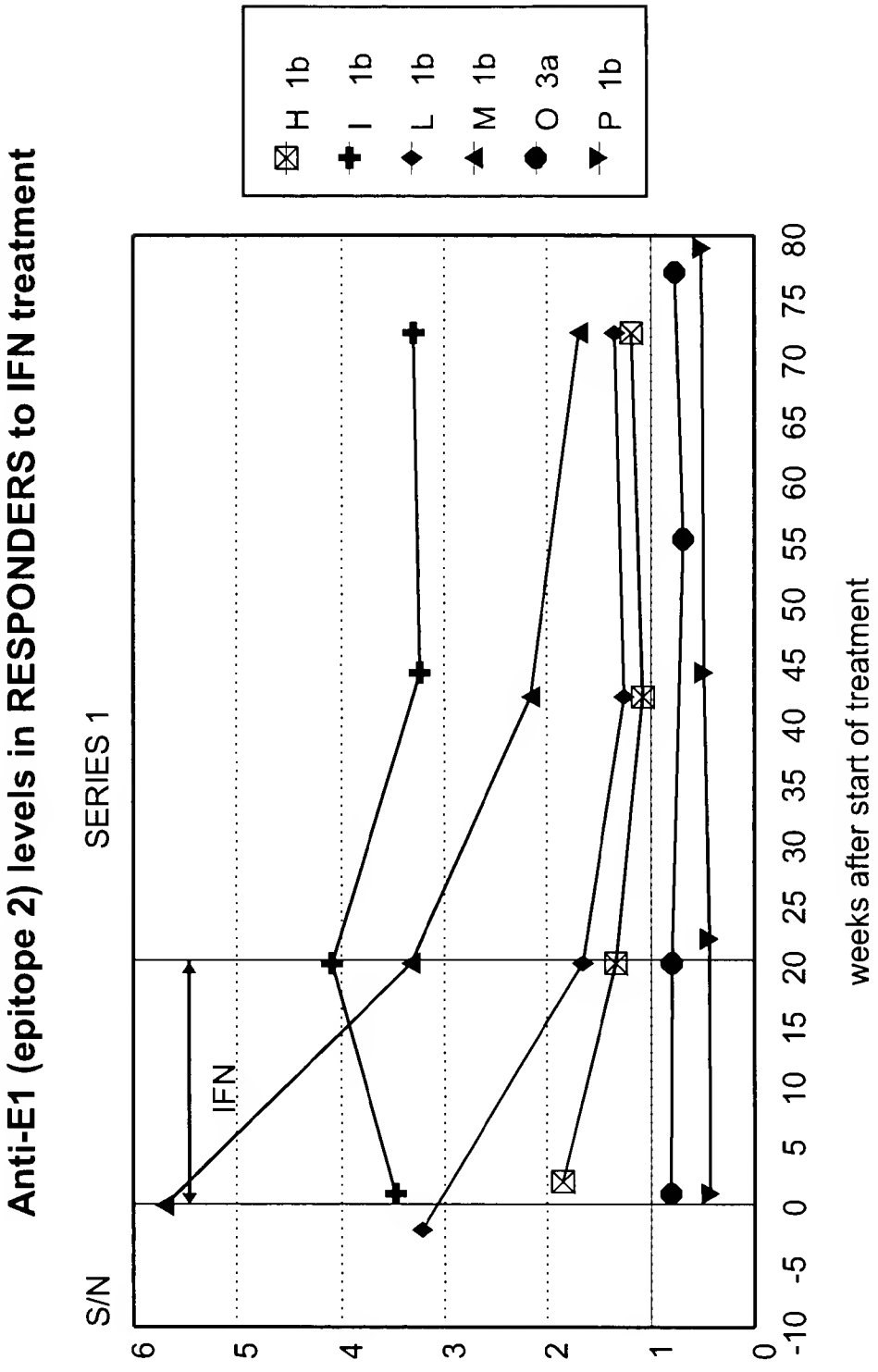

Figure 18

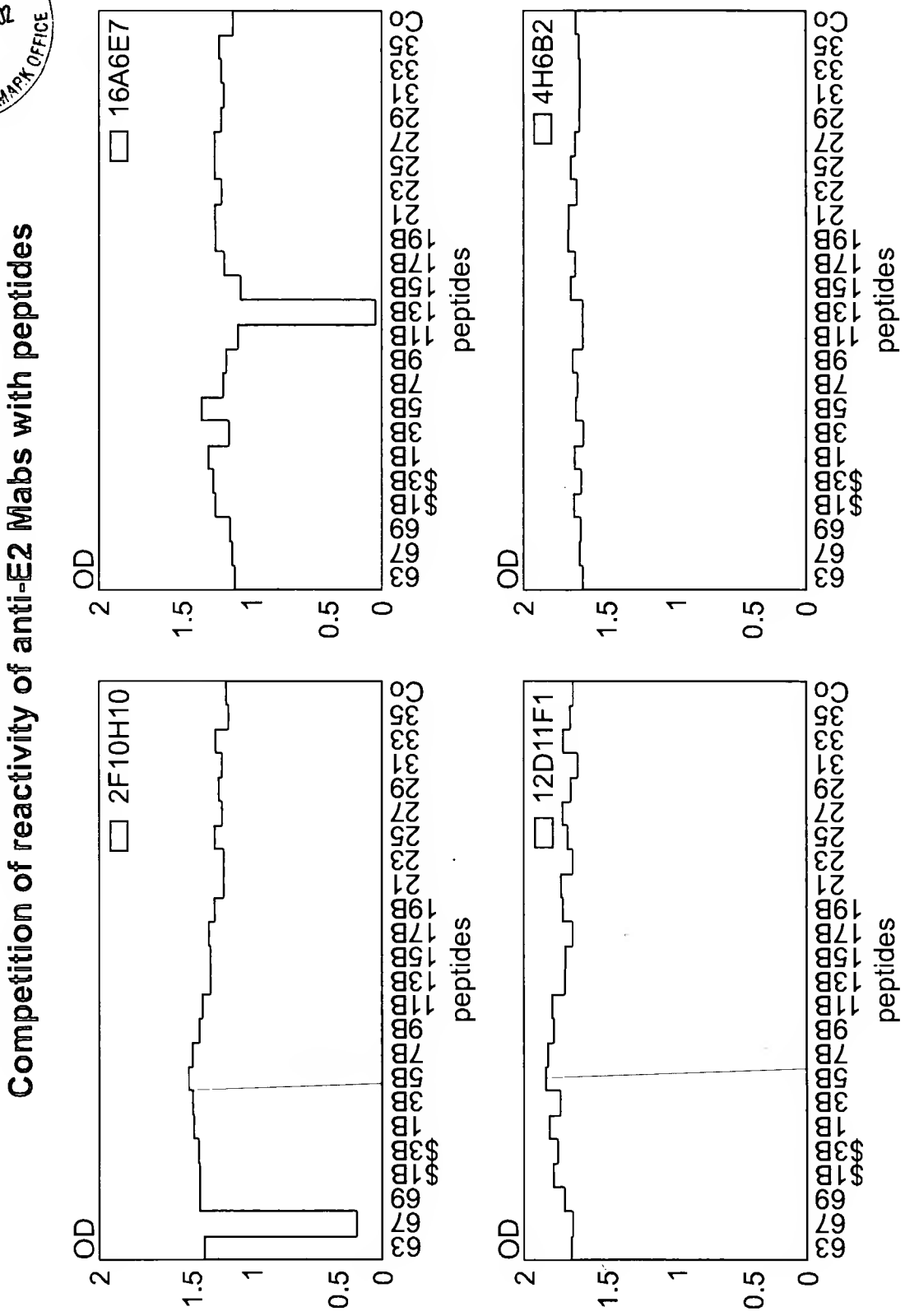

Figure 19

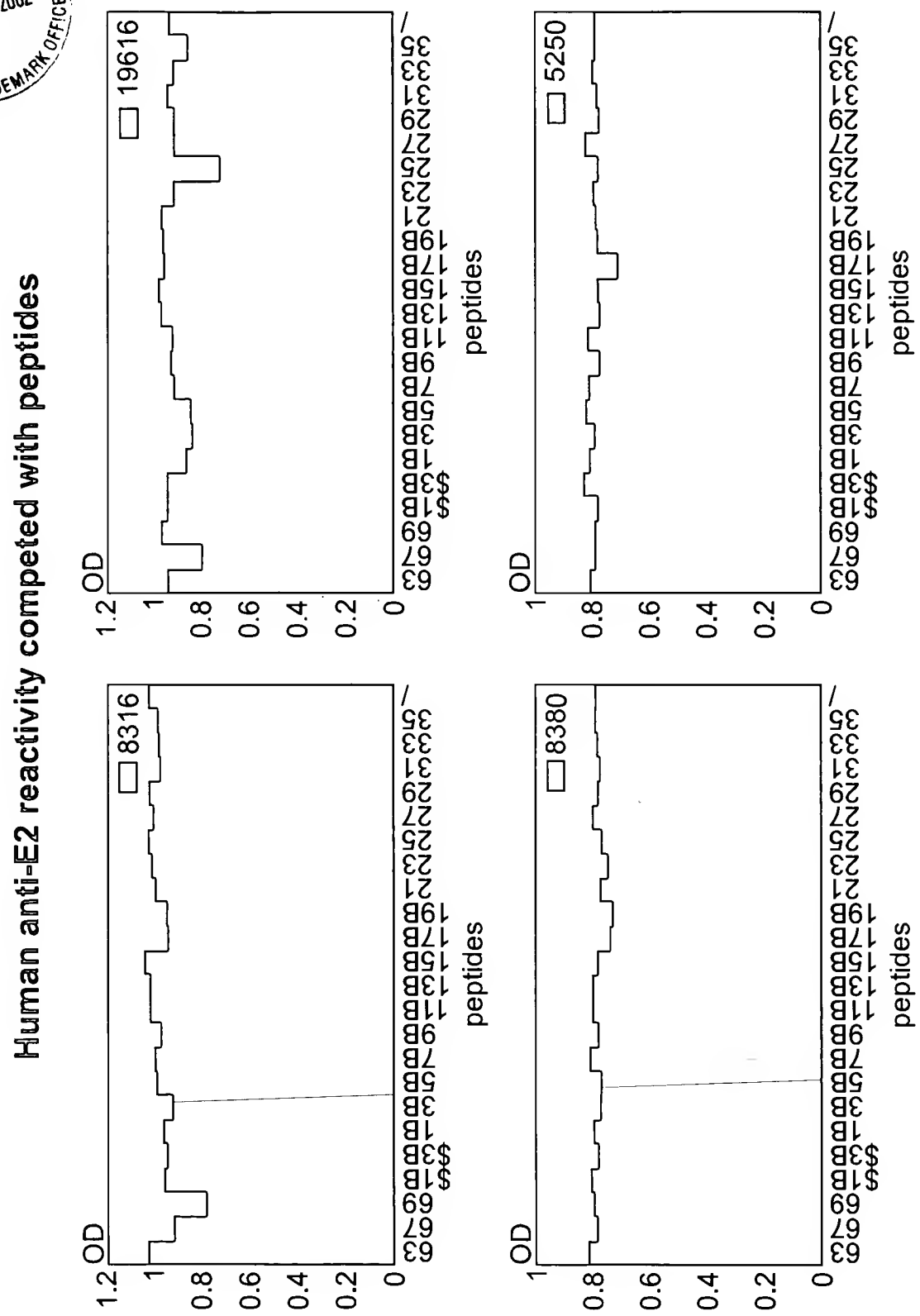

Figure 20

5' GGCATGCAAGCTTAATTAATT 3' (SEQ ID NO 1)
3'ACGTCCGTACGTTCGAATTAATTAATCGA 5' (SEQ ID NO 94)

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ATTAACTGCA 3' (SEQ ID NO 2)
3'CCTCCGGACGTGCACTAGCTCCCGTCTGTGGTAGTGGTGGTAGTGATTATCAATTAAT
TG 5' (SEQ ID NO 95)

SEQ ID NO 3 (HCC19A)
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GCTTCCGCTTATGAGGTGCGCAACGTGTCCGGGATGTACCATGTCACGAACGACTGCTCC
AACTCAAGCATTGTGTATGAGGCAGCGGACATGATCATGCACACCCCCGGGTGCGTGCCC
TGCGTTCGGGAGAACAACTCTTCCCGCTGCTGGGTAGCGCTCACCCCCACGCTCGCAGCT
AGGAACGCCAGCGTCCCCACCACGACAATACGACGCCACGTCGATTTGCTCGTTGGGGCG
GCTGCTCTCTGTTCCGCTATGTACGTGGGGGATCTCTGCGGATCTGTCTTCCTCGTCTCC
CAGCTGTTCACCATCTCGCCTCGCCGGCATGAGACGGTGCAGGACTGCAATTGCTCAATC
TATCCCGGCCACATAACAGGTCACCGTATGGCTTGGGATATGATGATGAACTGGTCGCCT
ACAACGGCCCTGGTGGTATCGCAGCTGCTCCGGATCCCACAAGCTGTCGTGGACATGGTG
GCGGGGGCCCATTGGGGAGTCCTGGCGGGCCTCGCCTACTATTCCATGGTGGGGAACTGG
GCTAAGGTTTTGATTGTGATGCTACTCTTTGCTCTCTAATAG

SEQ ID NO 5 (HCC110A)
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CTCTTGGCTTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCGCAACGTG
TCCGGGATGTACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCG
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TGCTGGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGTCCCCACCACGACA
ATACGACGCCACGTCGATTTGCTCGTTGGGGCGGCTGCTTTCTGTTCCGCTATGTACGTG
GGGGACCTCTGCGGATCTGTCTTCCTCGTCTCCCAGCTGTTCACCATCTCGCCTCGCCGG
CATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGT
ATGGCTTGGGATATGATGATGAACTGGTCGCCTACAACGGCCCTGGTGGTATCGCAGCTG
CTCCGGATCCCACAAGCTGTCGTGGACATGGTGGCGGGGGCCCATTGGGGAGTCCTGGCG
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TTTGCTCCCTAATAG

SEQ ID NO 7 (HCC111A)

Figure 21A

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CTGGAAGACGGCGTGAACTATGCAACAGGGAATTTGCCTGGTTGCTCTTTCTCTATCTTC
CTCTTGGCTTTACTGTCCTGTCTGACCATTCCAGCTTCCGCTTATGAGGTGCGCAACGTG
TCCGGGATGTACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCG
GACATGATCATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGC
TGCTGGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGTCCCCACTACGACA
ATACGACGCCACGTCGATTTGCTCGTTGGGGCGGCTGCTTTCTGTTCCGCTATGTACGTG
GGGGATCTCTGCGGATCTGTCTTCCTCGTCTCCCAGCTGTTCACCATCTCGCCTCGCCGG
CATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACAGGTCACCGT
ATGGCTTGGGATATGATGATGAACTGGTAATAG

SEQ ID NO 9 (HCCl12A)
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GCTTCCGCTTATGAAGTGCGCAACGTGTCCGGGGTGTACCATGTCACGAACGACTGCTCC
AACTCAAGCATAGTGTATGAGGCAGCGGACATGATCATGCACACCCCCGGGTGCGTGCCC
TGCGTTCGGGAGGGCAACTCCTCCCGTTGCTGGGTGGCGCTCACTCCCACGCTCGCGGCC
AGGAACGCCAGCGTCCCCACAACGACAATACGACGCCACGTCGATTTGCTCGTTGGGGCT
GCTGCTTTCTGTTCCGCTATGTACGTGGGGGATCTCTGCGGATCTGTTTTCCTTGTTTCC
CAGCTGTTCACCTTCTCACCTCGCCGGCATCAAACAGTACAGGACTGCAACTGCTCAATC
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TAG

SEQ ID NO 11 (HCCl13A)
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AACTCAAGCATAGTGTATGAGGCAGCGGACATGATCATGCACACCCCCGGGTGCGTGCCC
TGCGTTCGGGAGGGCAACTCCTCCCGTTGCTGGGTGGCGCTCACTCCCACGCTCGCGGCC
AGGAACGCCAGCGTCCCCACAACGACAATACGACGCCACGTCGATTTGCTCGTTGGGGCT
GCTGCTTTCTGTTCCGCTATGTACGTGGGGGATCTCTGCGGATCTGTTTTCCTTGTTTCC
CAGCTGTTCACCTTCTCACCTCGCCGGCATCAAACAGTACAGGACTGCAACTGCTCAATC
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CTCTTGGCTTTACTGTCCTGTCTAACCATTCCAGCTTCCGCTTACGAGGTGCGCAACGTG
TCCGGGATGTACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCG
GACATGATCATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGC
TGCTGGGTAGCGCTCACCCCCACGCTCGCGGCTAGGAACGCCAGCATCCCCACTACAACA

Figure 21B

ATACGACGCCACGTCGATTTGCTCGTTGGGGCGGCTGCTTTCTGTTCCGCTATGTACGTG
GGGGATCTCTGCGGATCTGTCTTCCTCGTCTCCCAGCTGTTCACCATCTCGCCTCGCCGG
CATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGT
ATGGCTTGGGATATGATGATGAACTGGTACTAATAG

SEQ ID NO 15 (HCPr51)
ATGCCCGGTTGCTCTTTCTCTATCTT

SEQ ID NO 16 (HCPr52)
ATGTTGGGTAAGGTCATCGATACCCT

SEQ ID NO 17 (HCPr53)
CTATTAGGACCAGTTCATCATCATATCCCA

SEQ ID NO 18 (HCPr54)
CTATTACCAGTTCATCATCATATCCCA

SEQ ID NO 19 (HCPr107)
ATACGACGCCACGTCGATTCCCAGCTGTTCACCATC

SEQ ID NO 20 (HCPr108)
GATGGTGAACAGCTGGGAATCGACGTGGCGTCGTAT

SEQ ID NO 21 (HCCl37)
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CTGGAGGACGGCGTGAACTATGCAACAGGGAATTTGCCCGGTTGCTCTTTCTCTATCTTC
CTCTTGGCTTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCGCAACGTG
TCCGGGATGTACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCG
GACATGATCATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGC
TGCTGGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGTCCCCACCACGACA
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CAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGTATGGCTTGGGAT
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CAAGCTGTCGTGGACATGGTGGCGGGGGCCCATTGGGGAGTCCTGGCGGGTCTCGCCTAC
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TAG

SEQ ID NO 23 (HCCl38)
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CTCTTGGCTTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCGCAACGTG
TCCGGGATGTACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCG

Figure 21C

GACATGATCATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGC
TGCTGGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGTCCCCACCACGACA
ATACGACGCCACGTCGATTCCCAGCTGTTCACCATCTCGCCTCGCCGGCATGAGACGGTG
CAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGTATGGCTTGGGAT
ATGATGATGAACTGGTAATAG

SEQ ID NO 25 (HCC139)
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CTCTTGGCTTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCGCAACGTG
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GACATGATCATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGC
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ATACGACGCCACGTCGATTCCCAGCTGTTCACCATCTCGCCTCGCCGGCATGAGACGGTG
CAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGTATGGCTTGGGAT
ATGATGATGAACTGGTCGCCTACAACGGCCCTGGTGGTATCGCAGCTGCTCCGGATCCTC
TAATAG

SEQ ID NO 27 (HCC140)
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CTCTTGGCTTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCGCAACGTG
TCCGGGATGTACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCG
GACATGATCATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGC
TGCTGGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGTCCCCACCACGACA
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CAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGTATGGCTTGGGAT
ATGATGATGAACTGGTCGCCTACAACGGCCCTGGTGGTATCGCAGCTGCTCCGGATCGTG
ATCGAGGGCAGACACCATCACCACCATCACTAATAG

SEQ ID NO 29 (HCC162)
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GAAGACGGGATAAATTTCGCAACAGGGAATTTGCCCGGTTGCTCCTTTTCTATTTTCCTT
CTCGCTCTGTTCTCTTGCTTAATTCATCCAGCAGCTAGTCTAGAGTGGCGGAATACGTCT
GGCCTCTATGTCCTTACCAACGACTGTTCCAATAGCAGTATTGTGTACGAGGCCGATGAC
GTTATTCTGCACACACCCGGCTGCATACCTTGTGTCCAGGACGGCAATACATCCACGTGC
TGGACCCCAGTGACACCTACAGTGGCAGTCAAGTACGTCGGAGCAACCACCGCTTCGATA
CGCAGTCATGTGGACCTATTAGTGGGCGCGGCCACGATGTGCTCTGCGCTCTACGTGGGT
GACATGTGTGGGGCTGTCTTCCTCGTGGGACAAGCCTTCACGTTCAGACCTCGTCGCCAT

Figure 21D

CAAACGGTCCAGACCTGTAACTGCTCGCTGTACCCAGGCCATCTTTCAGGACATCGAATG
GCTTGGGATATGATGATGAACTGGTAATAG

SEQ ID NO 31 (HCC163)
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CTCGTAGGCGGCCCCATTGGGGGCGTCGCAAGGGCTCTCGCACACGGTGTGAGGGTCCTT
GAGGACGGGGTAAACTATGCAACAGGGAATTTACCCGGTTGCTCTTTCTCTATCTTTATT
CTTGCTCTTCTCTCGTGTCTGACCGTTCCGGCCTCTGCAGTTCCCTACCGAAATGCCTCT
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CTGATCCTACACGCACCTGGTTGCGTGCCTTGTGTCATGACAGGTAATGTGAGTAGATGC
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CGGAGAGCCGTTGACTACCTAGCGGGAGGGGCTGCCCTCTGCTCCGCGTTATACGTAGGA
GACGCGTGTGGGGCACTATTCTTGGTAGGCCAAATGTTCACCTATAGGCCTCGCCAGCAC
GCTACGGTGCAGAACTGCAACTGTTCCATTTACAGTGGCCATGTTACCGGCCACCGGATG
GCATGGGATATGATGATGAACTGGTAATAG

SEQ ID NO 33 (HCPr109)
TGGGATATGATGATGAACTGGTC

SEQ ID NO 34 (HCPr72)
CTATTATGGTGGTAAKGCCARCARGAGCAGGAG

SEQ ID NO 35 (HCCL22A)
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GGCGTCGACGGGCATACCCGCGTGTCAGGAGGGGCAGCAGCCTCCGATACCAGGGGCCTT
GTGTCCCTCTTTAGCCCCGGGTCGGCTCAGAAAATCCAGCTCGTAAACACCAACGGCAGT
TGGCACATCAACAGGACTGCCCTGAACTGCAACGACTCCCTCCAAACAGGGTTCTTTGCC
GCACTATTCTACAAACACAAATTCAACTCGTCTGGATGCCCAGAGCGCTTGGCCAGCTGT
CGCTCCATCGACAAGTTCGCTCAGGGGTGGGGTCCCCTCACTTACACTGAGCCTAACAGC
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TCTCAGGTGTGCGGTCCAGTGTATTGCTTCACCCCGAGCCCTGTTGTGGTGGGGACGACC
GATCGGTTTGGTGTCCCCACGTATAACTGGGGGGCGAACGACTCGGATGTGCTGATTCTC
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TTCACCAAGACGTGTGGGGGCCCCCCGTGCAACATCGGGGGGGCCGGCAACAACACCTTG
ACCTGCCCCACTGACTGTTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATGCGGTTCT
GGGCCCTGGCTGACACCTAGGTGTATGGTTCATTACCCATATAGGCTCTGGCACTACCCC
TGCACTGTCAACTTCACCATCTTCAAGGTTAGGATGTACGTGGGGGGCGTGGAGCACAGG
TTCGAAGCCGCATGCAATTGGACTCGAGGAGAGCGTTGTGACTTGGAGGACAGGGATAGA
TCAGAGCTTAGCCCGCTGCTGCTGTCTACAACAGAGTGGCAGATACTGCCCTGTTCCTTC

Figure 21E

ACCACCCTGCCGGCCCTATCCACCGGCCTGATCCACCTCCATCAGAACATCGTGGACGTG
CAATACCTGTACGGTGTAGGGTCGGCGGTTGTCTCCCTTGTCATCAAATGGGAGTATGTC
CTGTTGCTCTTCCTTCTCCTGGCAGACGCGCGCATCTGCGCCTGCTTATGGATGATGCTG
CTGATAGCTCAAGCTGAGGCCGCCTTAGAGAACCTGGTGGTCCTCAATGCGGCGGCCGTG
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CTGCTGGCCTTACCACCACGAGCTTATGCCTAGTAA

SEQ ID NO 37 (HCC141)
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CGCACTATTCTACAAACACAAATTCAACTCGTCTGGATGCCCAGAGCGCTTGGCCAGCTG
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GTTCACCAAGACGTGTGGGGGCCCCCCGTGCAACATCGGGGGGGCCGGCAACAACACCTT
GACCTGCCCCACTGACTGTTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATGCGGTTC
TGGGCCCTGGCTGACACCTAGGTGTATGGTTCATTACCCATATAGGCTCTGGCACTACCC
CTGCACTGTCAACTTCACCATCTTCAAGGTTAGGATGTACGTGGGGGGCGTGGAGCACAG
GTTCGAAGCCGCATGCAATTGGACTCGAGGAGAGCGTTGTGACTTGGAGGACAGGGATAG
ATCAGAGCTTAGCCCGCTGCTGCTGTCTACAACAGAGTGGCAGAGTGGCAGAGCTTAATT
AATTAG

SEQ ID NO 39 (HCC142)
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CGCCTACTATTCCATGGTGGGGAACTGGGCTAAGGTTTTGGTTGTGATGCTACTCTTTGC
CGGCGTCGACGGGCATACCCGCGTGTCAGGAGGGGCAGCAGCCTCCGATACCAGGGGCCT
TGTGTCCCTCTTTAGCCCCGGGTCGGCTCAGAAAATCCAGCTCGTAAACACCAACGGCAG
TTGGCACATCAACAGGACTGCCCTGAACTGCAACGACTCCCTCCAAACAGGGTTCTTTGC
CGCACTATTCTACAAACACAAATTCAACTCGTCTGGATGCCCAGAGCGCTTGGCCAGCTG
TCGCTCCATCGACAAGTTCGCTCAGGGGTGGGGTCCCCTCACTTACACTGAGCCTAACAG
CTCGGACCAGAGGCCCTACTGCTGGCACTACGCGCCTCGACCGTGTGGTATTGTACCCGC
GTCTCAGGTGTGCGGTCCAGTGTATTGCTTCACCCCGAGCCCTGTTGTGGTGGGGACGAC
CGATCGGTTTGGTGTCCCCACGTATAACTGGGGGGCGAACGACTCGGATGTGCTGATTCT
CAACAACACGCGGCCGCCGCGAGGCAACTGGTTCGGCTGTACATGGATGAATGGCACTGG
GTTCACCAAGACGTGTGGGGGCCCCCCGTGCAACATCGGGGGGGCCGGCAACAACACCTT

Figure 21F

GACCTGCCCCACTGACTGTTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATGCGGTTC
TGGGCCCTGGCTGACACCTAGGTGTATGGTTCATTACCCATATAGGCTCTGGCACTACCC
CTGCACTGTCAACTTCACCATCTTCAAGGTTAGGATGTACGTGGGGGGCGTGGAGCACAG
GTTCGAAGCCGCATGCAATTGGACTCGAGGAGAGCGTTGTGACTTGGAGGACAGGGATAG
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ACCATCACTAATAG

SEQ ID NO 41 (HCC143)
ATGGTGGGGAACTGGGCTAAGGTTTTGGTTGTGATGCTACTCTTTGCCGGCGTCGACGGG
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AGCCCCGGGTCGGCTCAGAAAATCCAGCTCGTAAACACCAACGGCAGTTGGCACATCAAC
AGGACTGCCCTGAACTGCAACGACTCCCTCCAAACAGGGTTCTTTGCCGCACTATTCTAC
AAACACAAATTCAACTCGTCTGGATGCCCAGAGCGCTTGGCCAGCTGTCGCTCCATCGAC
AAGTTCGCTCAGGGGTGGGGTCCCCTCACTTACACTGAGCCTAACAGCTCGGACCAGAGG
CCCTACTGCTGGCACTACGCGCCTCGACCGTGTGGTATTGTACCCGCGTCTCAGGTGTGC
GGTCCAGTGTATTGCTTCACCCCGAGCCCTGTTGTGGTGGGGACGACCGATCGGTTTGGT
GTCCCCACGTATAACTGGGGGGCGAACGACTCGGATGTGCTGATTCTCAACAACACGCGG
CCGCCGCGAGGCAACTGGTTCGGCTGTACATGGATGAATGGCACTGGGTTCACCAAGACG
TGTGGGGGCCCCCCGTGCAACATCGGGGGGGCCGGCAACAACACCTTGACCTGCCCCACT
GACTGTTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATGCGGTTCTGGGCCCTGGCTG
ACACCTAGGTGTATGGTTCATTACCCATATAGGCTCTGGCACTACCCCTGCACTGTCAAC
TTCACCATCTTCAAGGTTAGGATGTACGTGGGGGGCGTGGAGCACAGGTTCGAAGCCGCA
TGCAATTGGACTCGAGGAGAGCGTTGTGACTTGGAGGACAGGGATAGATCAGAGCTTAGC
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SEQ ID NO 43 (HCC144)
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AGGACTGCCCTGAACTGCAACGACTCCCTCCAAACAGGGTTCTTTGCCGCACTATTCTAC
AAACACAAATTCAACTCGTCTGGATGCCCAGAGCGCTTGGCCAGCTGTCGCTCCATCGAC
AAGTTCGCTCAGGGGTGGGGTCCCCTCACTTACACTGAGCCTAACAGCTCGGACCAGAGG
CCCTACTGCTGGCACTACGCGCCTCGACCGTGTGGTATTGTACCCGCGTCTCAGGTGTGC
GGTCCAGTGTATTGCTTCACCCCGAGCCCTGTTGTGGTGGGGACGACCGATCGGTTTGGT
GTCCCCACGTATAACTGGGGGGCGAACGACTCGGATGTGCTGATTCTCAACAACACGCGG
CCGCCGCGAGGCAACTGGTTCGGCTGTACATGGATGAATGGCACTGGGTTCACCAAGACG
TGTGGGGGCCCCCCGTGCAACATCGGGGGGGCCGGCAACAACACCTTGACCTGCCCCACT
GACTGTTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATGCGGTTCTGGGCCCTGGCTG
ACACCTAGGTGTATGGTTCATTACCCATATAGGCTCTGGCACTACCCCTGCACTGTCAAC
TTCACCATCTTCAAGGTTAGGATGTACGTGGGGGGCGTGGAGCACAGGTTCGAAGCCGCA
TGCAATTGGACTCGAGGAGAGCGTTGTGACTTGGAGGACAGGGATAGATCAGAGCTTAGC

Figure 21G

CCGCTGCTGCTGTCTACAACAGGTGATCGAGGGCAGACACCATCACCACCATCACTAATA

SEQ ID NO 45 (HCCL64)

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CTGAACTGCAACGACTCCCTCCAAACAGGGTTCTTTGCCGCACTATTCTACAAACACAAA
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CTGTCTACAACAGAGTGGCAGATACTGCCCTGTTCCTTCACCACCCTGCCGGCCCTATCC
ACCGGCCTGATCCACCTCCATCAGAACATCGTGGACGTGCAATACCTGTACGGTGTAGGG
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GCAGACGCGCGCATCTGCGCCTGCTTATGGATGATGCTGCTGATAGCTCAAGCTGAGGCC
GCCTTAGAGAACCTGGTGGTCCTCAATGCGGCGGCCGTGGCCGGGGCGCATGGCACTCTT
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GCTTATGCCTAGTAA

SEQ ID NO 47 (HCCl65)

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CTCTTGGCTTTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCGCAACGTG
TCCGGGATGTACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCG
GACATGATCATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGC
TGCTGGGTAGCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGTCCCCACCACGACA
ATACGACGCCACGTCGATTTGCTCGTTGGGGCGGCTGCTTTCTGTTCCGCTATGTACGTG
GGGGACCTCTGCGGATCTGTCTTCCTCGTCTCCCAGCTGTTCACCATCTCGCCTCGCCGG
CATGAGACGGTGCAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGT
ATGGCTTGGGATATGATGATGAACTGGTCGCCTACAACGGCCCTGGTGGTATCGCAGCTG
CTCCGGATCCCACAAGCTGTCGTGGACATGGTGGCGGGGGCCCATTGGGGAGTCCTGGCG

Figure 21H

GGCCTCGCCTACTATTCCATGGTGGGGAACTGGGCTAAGGTTTTGGTTGTGATGCTACTC
TTTGCCGGCGTCGACGGGCATACCCGCGTGTCAGGAGGGGCAGC AGCCTCCGATACCAG
GGGCCTTGTGTCCCTCTTTAGCCCCGGGTCGGCTCAGAAAATCCAGCTCGTAAACACCAA
CGGCAGTTGGCACATCAACAGGACTGCCCTGAACTGCAACGACTCCCTCCAAACAGGGTT
CTTTGCCGCACTATTCTACAAACACAAATTCAACTCGTCTGGATGCCCAGAGCGCTTGGC
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GATTCTCAACAACACGCGGCCGCCGCGAGGCAACTGGTTCGGCTGTACATGGATGAATGG
CACTGGGTTCACCAAGACGTGTGGGGGCCCCCCGTGCAACATCGGGGGGGCCGGCAACAA
CACCTTGACCTGCCCCACTGACTGTTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATG
CGGTTCTGGGCCCTGGCTGACACCTAGGTGTATGGTTCATTACCCATATAGGCTCTGGCA
CTACCCCTGCACTGTCAACTTCACCATCTTCAAGGTTAGGATGTACGTGGGGGGCGTGGA
GCACAGGTTCGAAGCCGCATGCAATTGGACTCGAGGAGAGCGTTGTGACTTGGAGGACAG
GGATAGATCAGAGCTTAGCCCGCTGCTGCTGTCTACAACAGAGTGGCAGATACTGCCCTG
TTCCTTCACCACCCTGCCGGCCCTATCCACCGGCCTGATCCACCTCCATCAGAACATCGT
GGACGTGCAATACCTGTACGGTGTAGGGTCGGCGGTTGTCTCCCTTGTCATCAAATGGGA
GTATGTCCTGTTGCTCTTCCTTCTCCTGGCAGACGCGCGCATCTGCGCCTGCTTATGGAT
GATGCTGCTGATAGCTCAAGCTGAGGCCGCCTTAGAGAACCTGGTGGTCCTCAATGCGGC
GGCCGTGGCCGGGGCGCATGGCACTCTTTCCTTCCTTGTGTTCTTCTGTGCTGCCTGGTA
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SEQ ID NO 49 (HCC166)
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AGGCGACAACCTATCCCCAAGGCTCGCCGACCCGAGGGTAGGGCCTGGGCTCAGCCCGGG
TACCCTTGGCCCCTCTATGGCAATGAGGGCATGGGGTGGGCAGGATGGCTCCTGTCACCC
CGCGGCTCTCGGCCTAGTTGGGGCCCTACAGACCCCCGGCGTAGGTCGCGTAATTTGGGT
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GGCGCCCCCCTAGGGGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGGTTCTGGAGGAC
GGCGTGAACTATGCAACAGGGAATTTGCCCGGTTGCTCTTTCTCTATCTTCCTCTTGGCT
TTGCTGTCCTGTCTGACCGTTCCAGCTTCCGCTTATGAAGTGCGCAACGTGTCCGGGATG
TACCATGTCACGAACGACTGCTCCAACTCAAGCATTGTGTATGAGGCAGCGGACATGATC
ATGCACACCCCCGGGTGCGTGCCCTGCGTTCGGGAGAACAACTCTTCCCGCTGCTGGGTA
GCGCTCACCCCCACGCTCGCAGCTAGGAACGCCAGCGTCCCCACCACGACAATACGACGC
CACGTCGATTTGCTCGTTGGGGCGGCTGCTTTCTGTTCCGCTATGTACGTGGGGGACCTC
TGCGGATCTGTCTTCCTCGTCTCCCAGCTGTTCACCATCTCGCCTCGCCGGCATGAGACG
GTGCAGGACTGCAATTGCTCAATCTATCCCGGCCACATAACGGGTCACCGTATGGCTTGG

Figure 21I

GATATGATGATGAACTGGTCGCCTACAACGGCCCTGGTGGTATCGCAGCTGCTCCGGATC
CCACAAGCTGTCGTGGACATGGTGGCGGGGGCCCATTGGGGAGTCCTGGCGGGCCTCGCC
TACTATTCCATGGTGGGGAACTGGGCTAAGGTTTTGGTTGTGATGCTACTCTTTGCCGGC
GTCGACGGGCATACCCGCGTGTCAGGAGGGGCAGCAGCCTCCGATACCAGGGGCCTTGTG
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TCCATCGACAAGTTCGCTCAGGGGTGGGGTCCCCTCACTTACACTGAGCCTAACAGCTCG
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CAGGTGTGCGGTCCAGTGTATTGCTTCACCCCGAGCCCTGTTGTGGTGGGGACGACCGAT
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TGCCCCACTGACTGTTTTCGGAAGCACCCCGAGGCCACCTACGCCAGATGCGGTTCTGGG
CCCTGGCTGACACCTAGGTGTATGGTTCATTACCCATATAGGCTCTGGCACTACCCCTGC
ACTGTCAACTTCACCATCTTCAAGGTTAGGATGTACGTGGGGGGCGTGGAGCACAGGTTC
GAAGCCGCATGCAATTGGACTCGAGGAGAGCGTTGTGACTTGGAGGACAGGGATAGATCA
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AGGCTGGTCCCTGGTGCGGCATACGCCTTCTATGGCGTGTGGCCGCTGCTCCTGCTTCTG
CTGGCCTTACCACCACGAGCTTATGCCTAGTAA

Figure 21J

			OD measured at 450nm construct			
Fraction	Volume	dilution	39 type 1b	40 type 1b	62 type 3a	63 type 5a
Start	23ml	1/20	2.517	1.954	1.426	1.142
Flow through	23ml	1/20	0.087	0.085	0.176	0.120
1	0.4ml	1/200	0.102	0.051	0.048	0.050
2			0.396	0.550	0.090	0.067
3			2.627	2.603	2.481	2.372
4			3	2.967	3	2.694
5			3	2.810	2.640	2.154
6			2.694	2.499	1.359	1.561
7			2.408	2.481	0.347	1.390
8			2.176	1.970	1.624	0.865
9			1.461	1.422	0.887	0.604
10			1.286	0.926	0.543	0.519
11			0.981	0.781	0.294	0.294
12			0.812	0.650	0.249	0.199
13			0.373	0.432	0.239	0.209
14			0.653	0.371	0.145	0.184
15			0.441	0.348	0.151	0.151
16			0.321	0.374	0.098	0.106
17			0.525	0.186	0.099	0.108
18			0.351	0.171	0.083	0.090
19			0.192	0.164	0.084	0.087

Figure 22

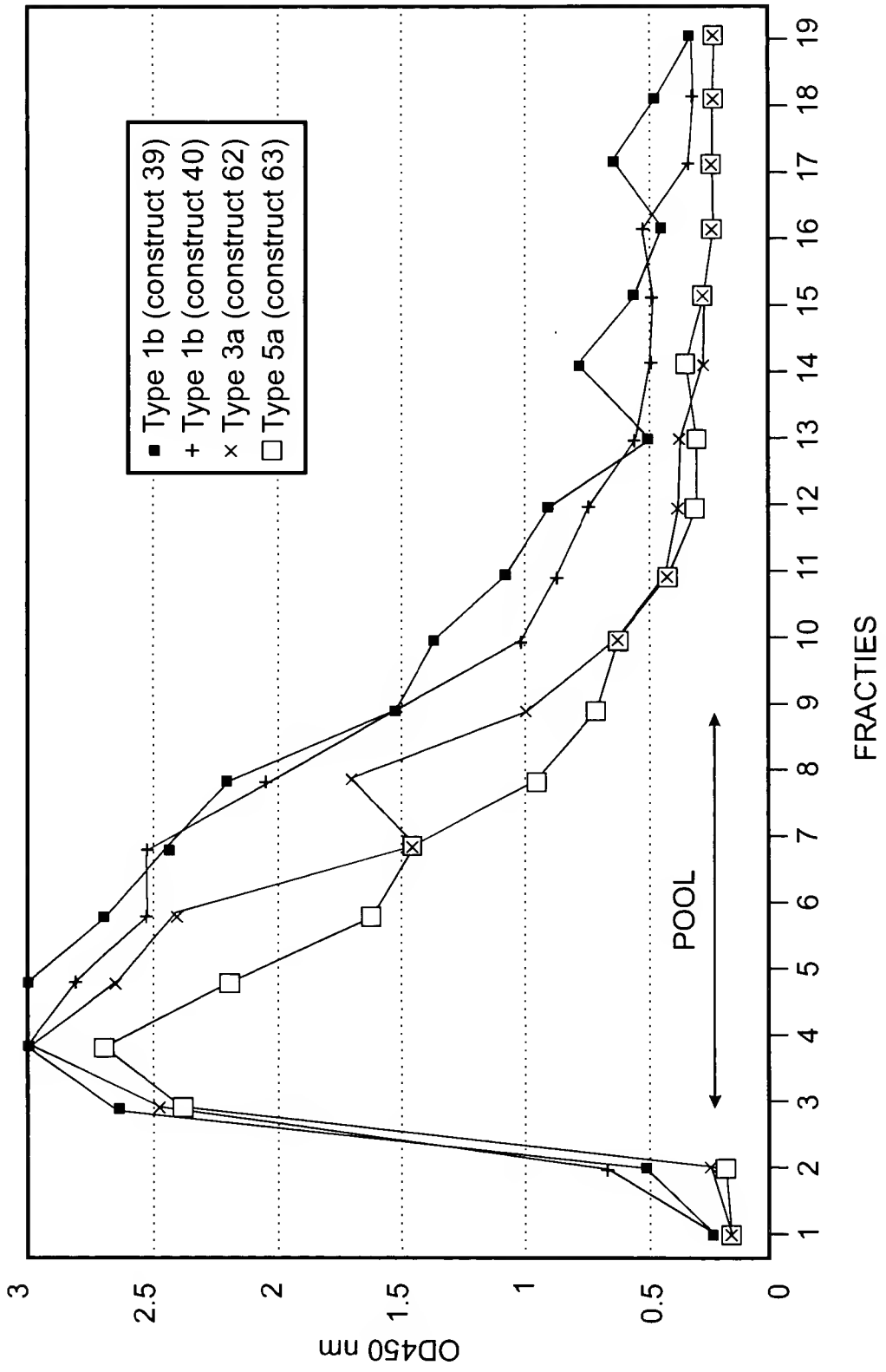


Figure 23

OD measured at 450nm

Fraction	Volume	dilution	construct 39 type 1b	40 type 1b	62 type 3a	63 type 5a
20	250µl	1/200	0.072	0.130	0.096	0.051
21			0.109	0.293	0.084	0.052
22			0.279	0.249	0.172	0.052
23			0.093	0.151	0.297	0.054
24			0.080	0.266	0.438	0.056
25			0.251	0.100	0.457	0.048
26			3	1.649	0.722	0.066
27			3	3	2.528	0.889
28			3	3	3	2.345
29			3	3	2.849	2.580
30			2.227	1.921	1.424	1.333
31			0.263	0.415	0.356	0.162
32			0.071	0.172	0.154	0.064
33			0.103	0.054	0.096	0.057
34			0.045	0.045	0.044	0.051
35			0.043	0.047	0.045	0.046
36			0.045	0.045	0.049	0.040
37			0.045	0.047	0.046	0.048
38			0.046	0.048	0.047	0.057
39			0.045	0.048	0.050	0.057
40			0.046	0.049	0.048	0.049

Figure 24

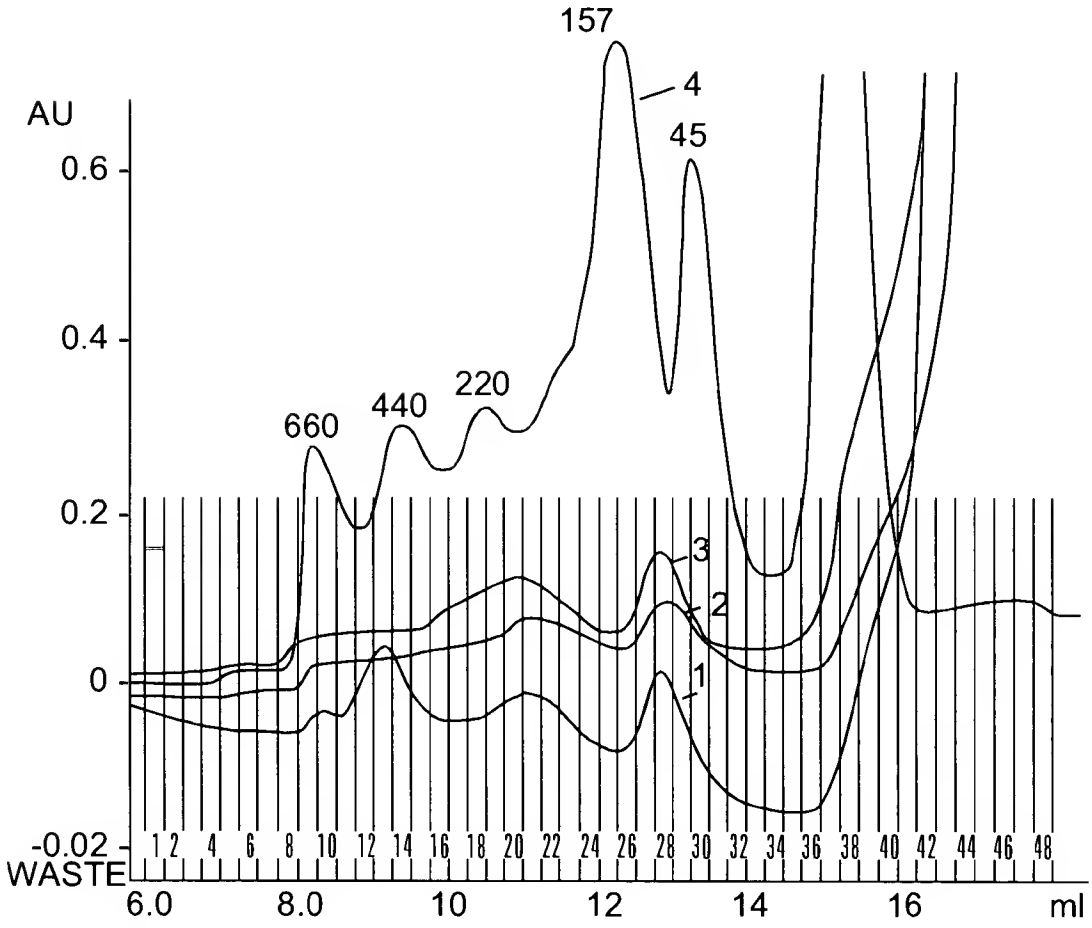


Figure 25

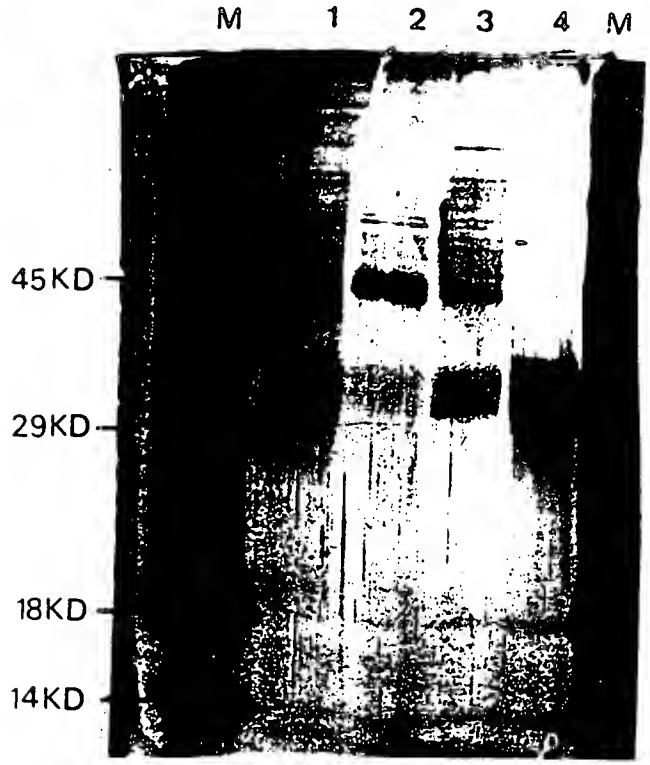


Fig. 26

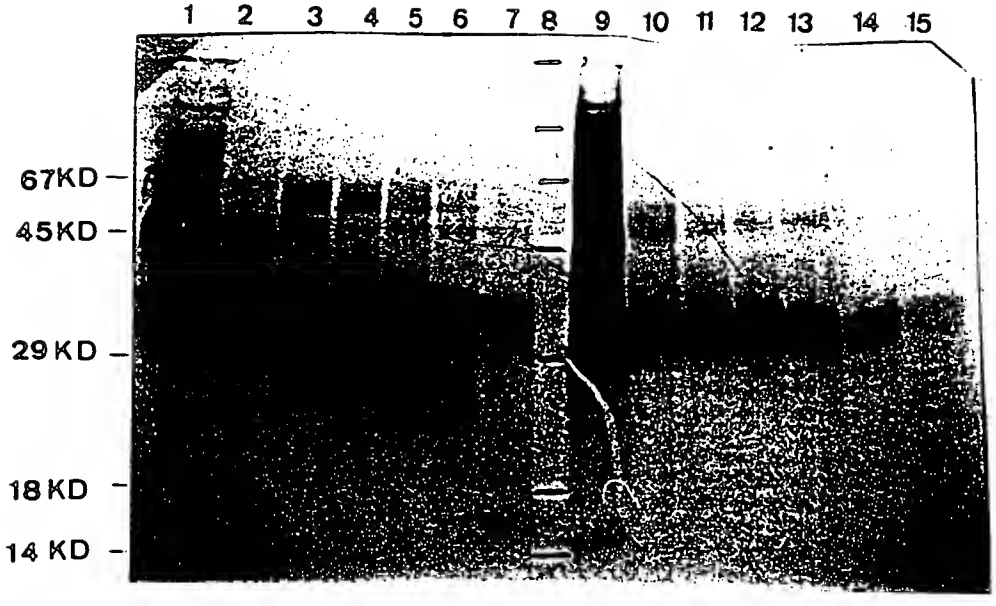


Fig. 27

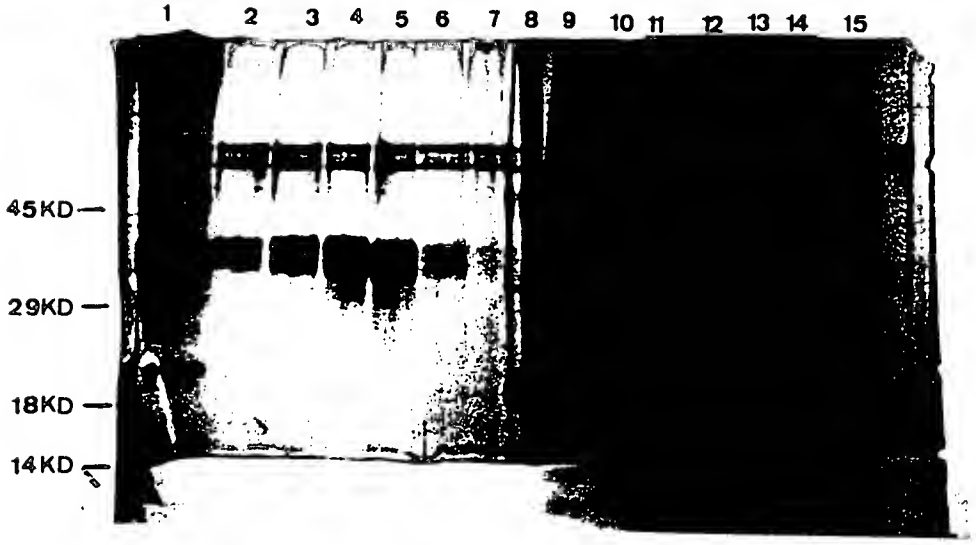
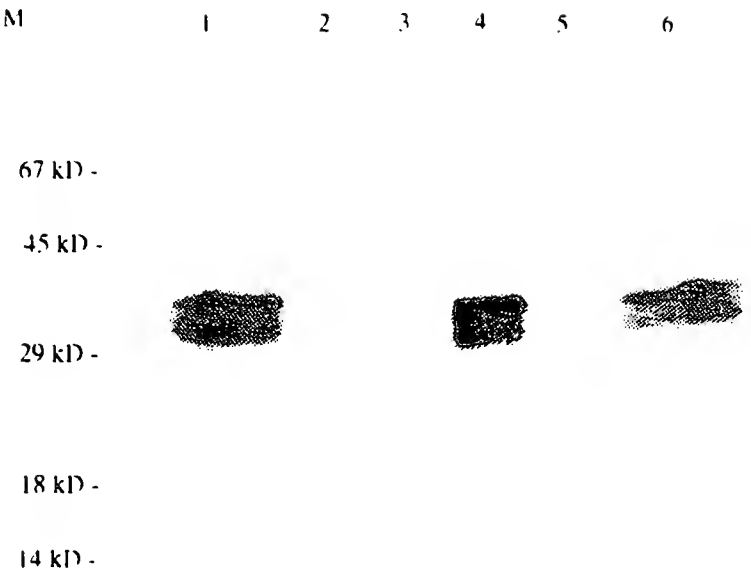


Fig.28

Fig.29



Lane 1: Crude Lysate
Lane 2: Flow through Lentil Chromatography
Lane 3: Wash with EMPIGEN Lentil Chromatography
Lane 4: Eluate Lentil Chromatography
Lane 5: Flow through during concentration lentil eluate
Lane 6: Pool of E1after Size Exclusion Chromatography

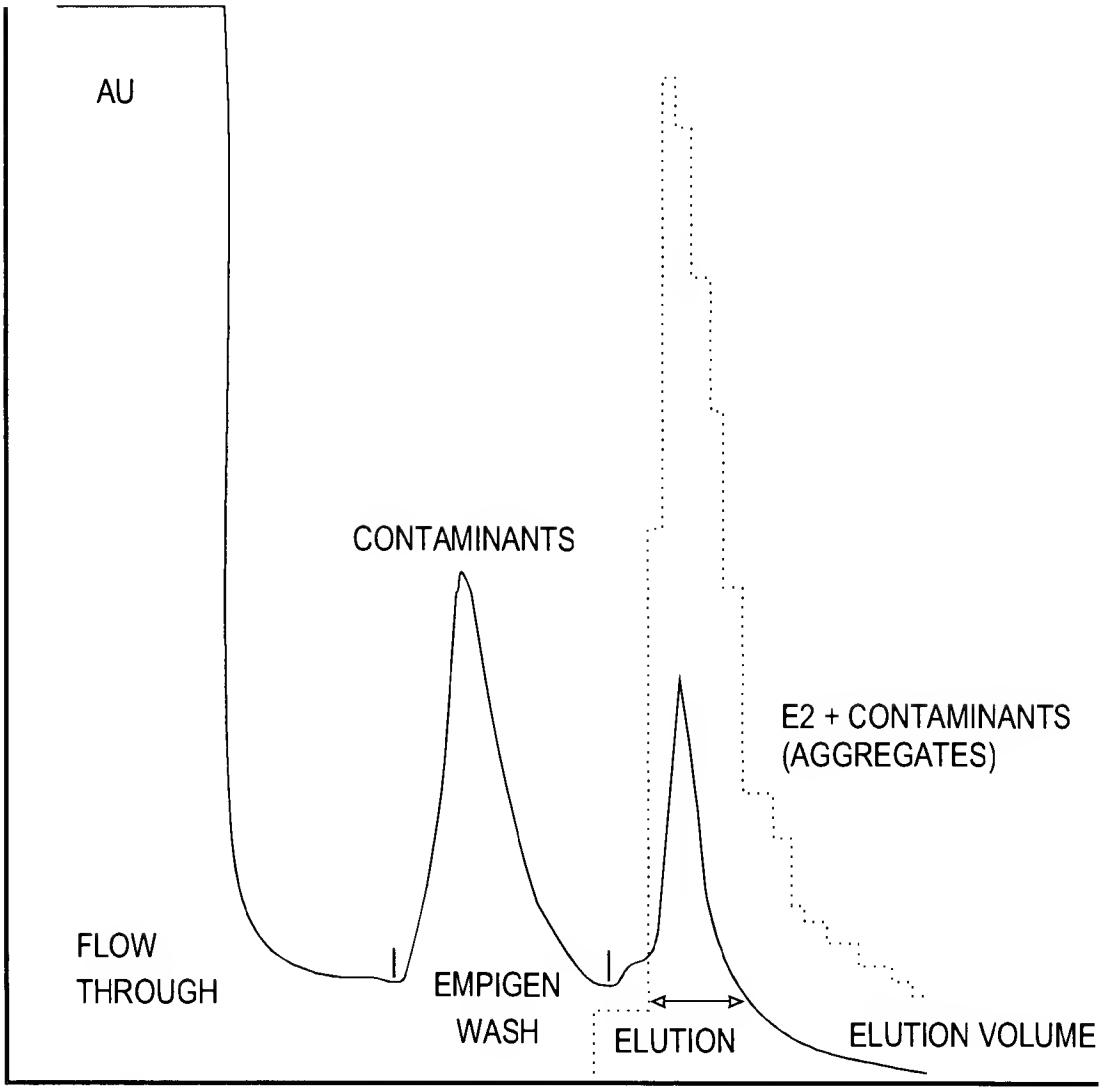


Figure 30

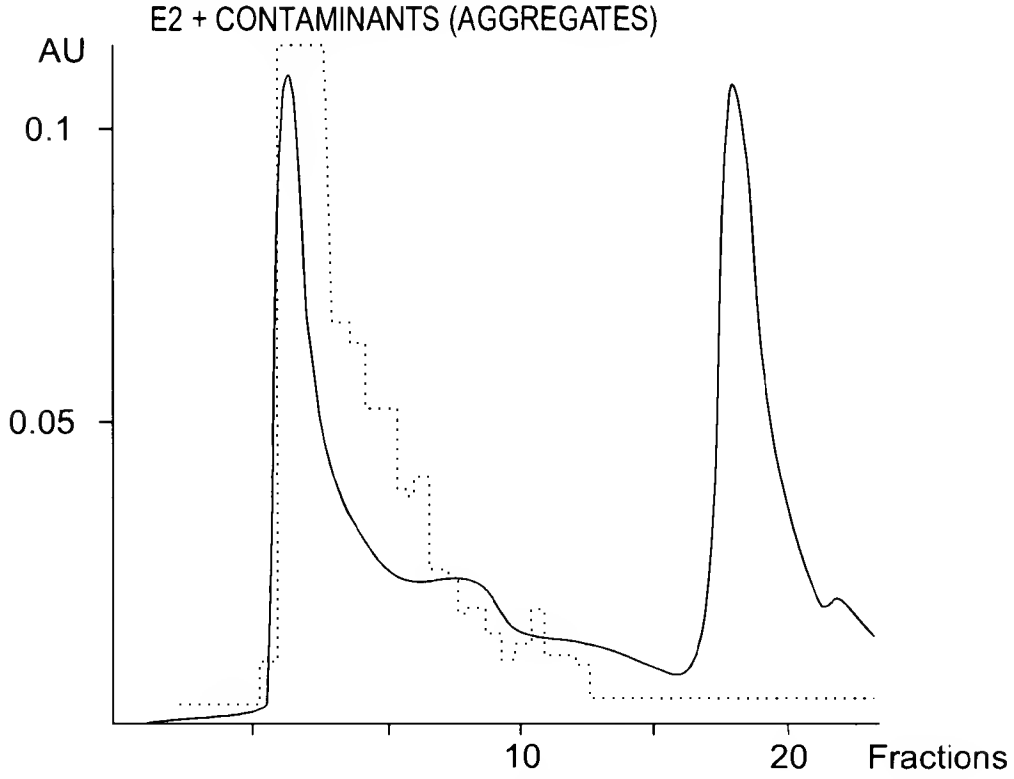


Figure 31A

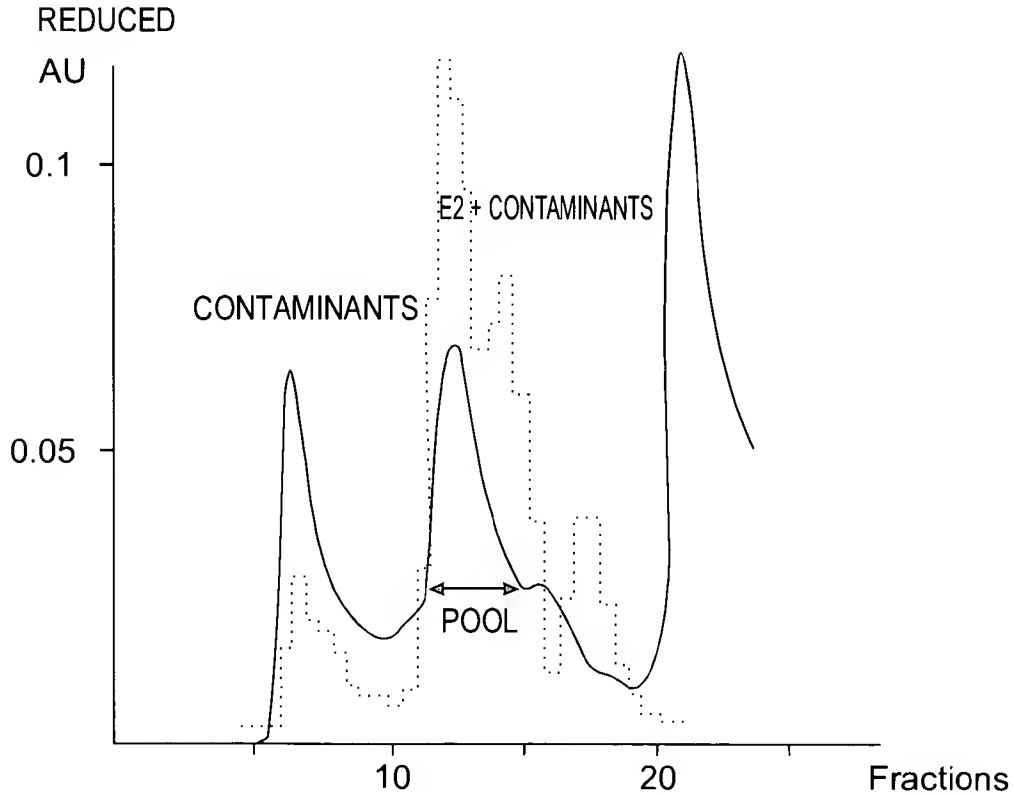


Figure 31B

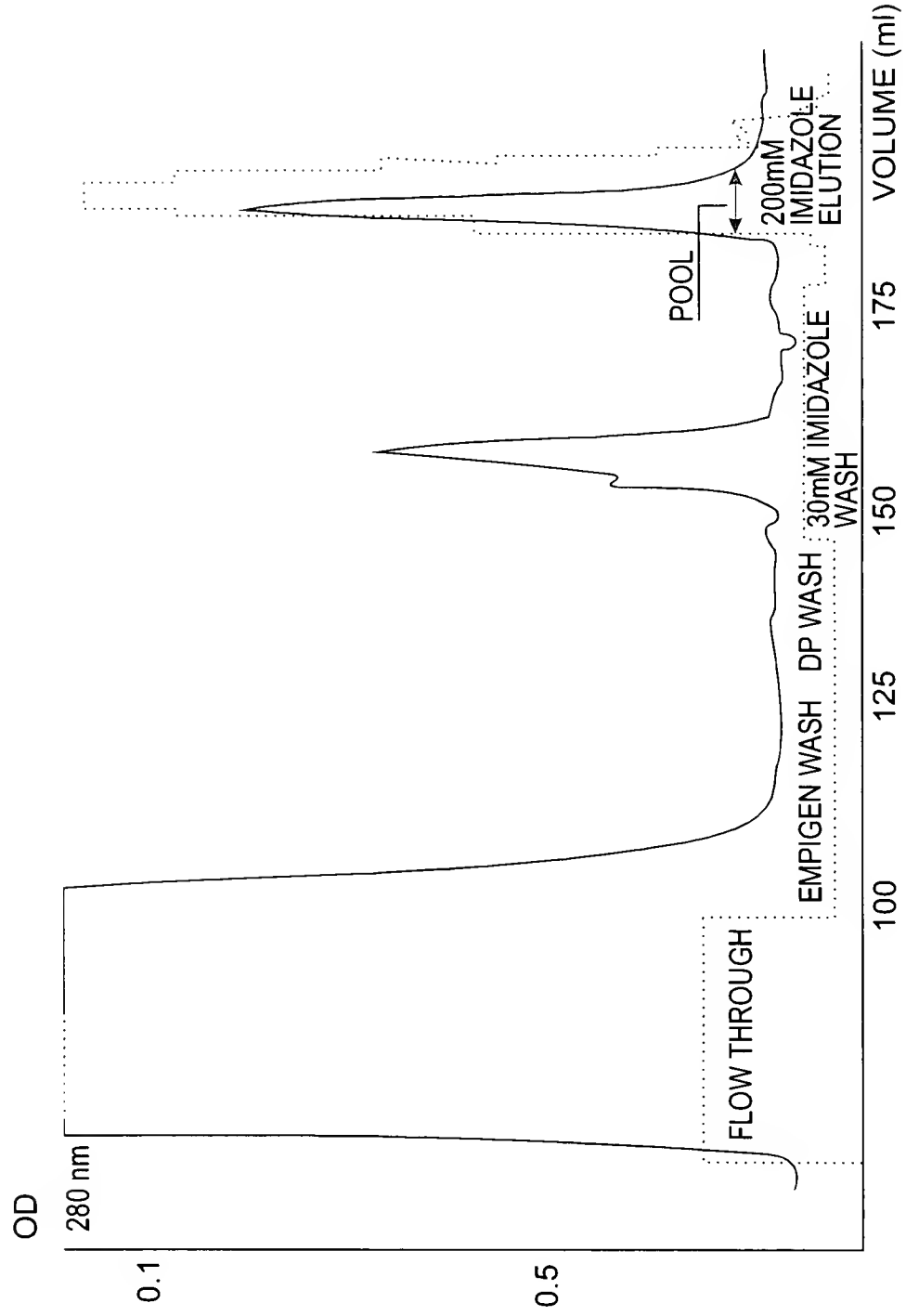
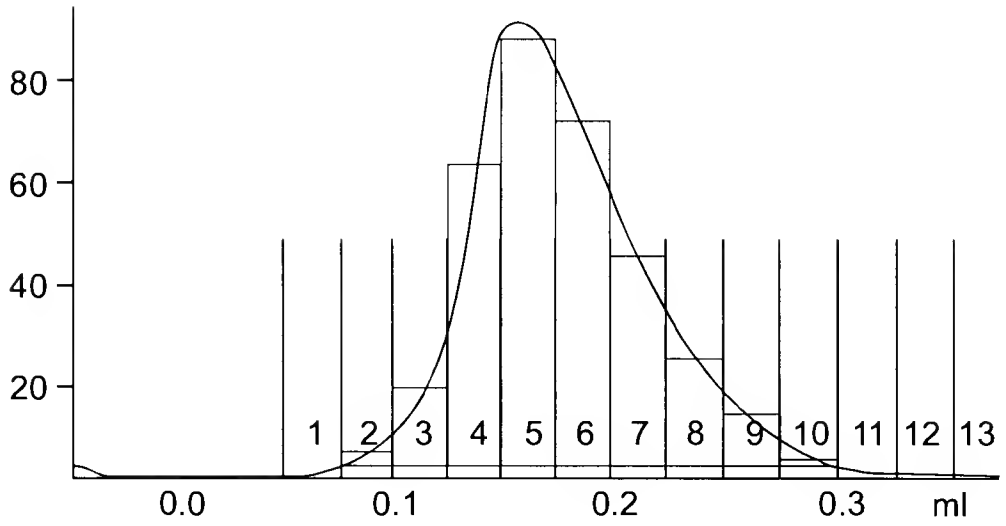


Figure 32

SILVER STAIN OF PURIFIED E2

1. 30 mM IMIDAZOLE WASH Ni-IMAC
2. 0.5 ug E2

Fig.33



No.	Ret (ml)	Peak start (ml)	Peak end (ml)	Dur (ml)	Area (ml*mAU)	Height (mAU)
1	-0.45	-0.46	-0.43	0.04	0.0976	4.579
2	1.55	0.75	3.26	2.51	796.4167	889.377
3	3.27	3.26	3.31	0.05	0.0067	0.224
4	3.33	3.32	3.33	0.02	0.0002	0.018

Total number of detected peaks = 4
Total Area above baseline = 0.796522 ml*AU
Total area in evaluated peaks = 0.796521 ml*AU
Ratio peak area / total area = 0.999999
Total peak duration = 2.613583 ml

Figure 34

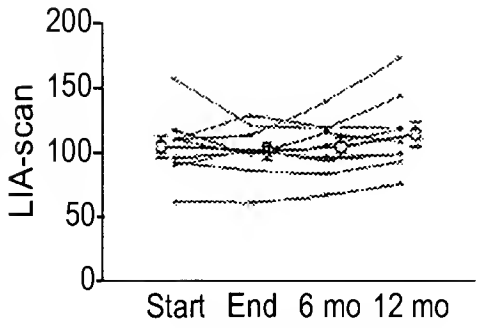


Fig. 35A-1

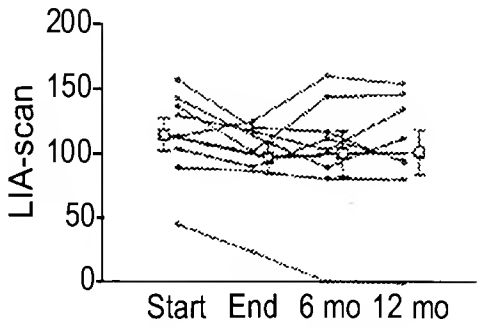


Fig. 35A-2

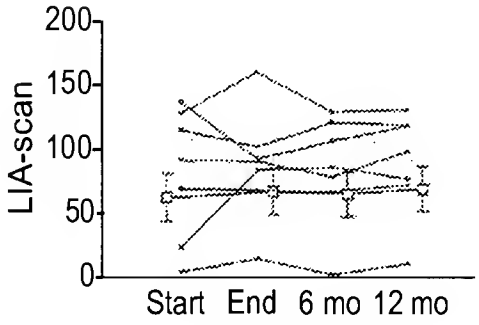


Fig. 35A-3

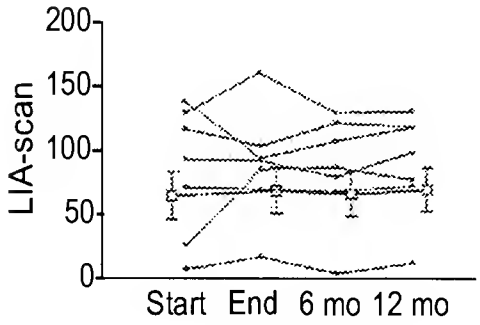


Fig. 35A-4

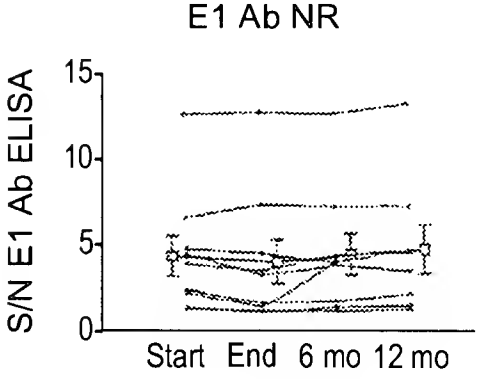


Fig. 35A-5

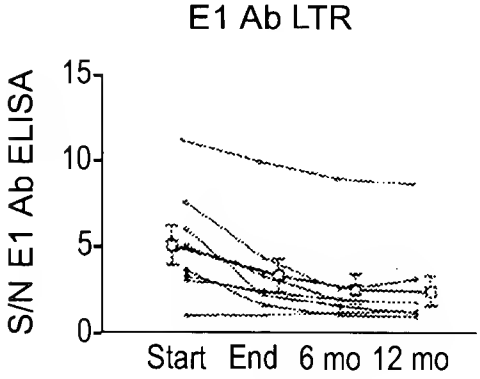


Fig. 35A-6

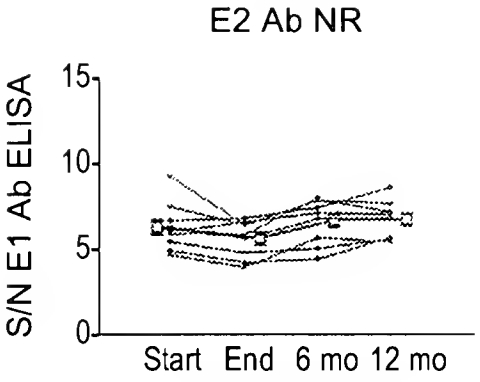


Fig. 35A-7

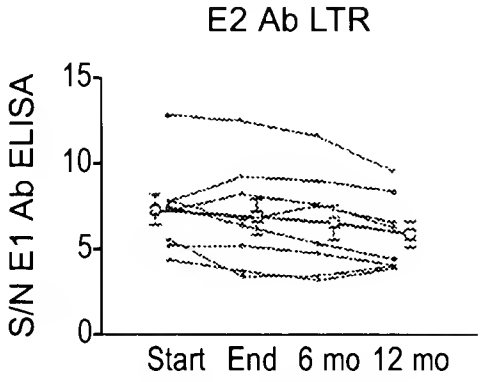


Fig. 35A-8

Core 1 Ab NR

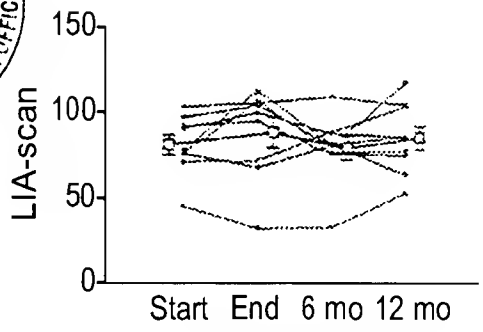


Fig. 35B-1

Core 1 Ab LTR

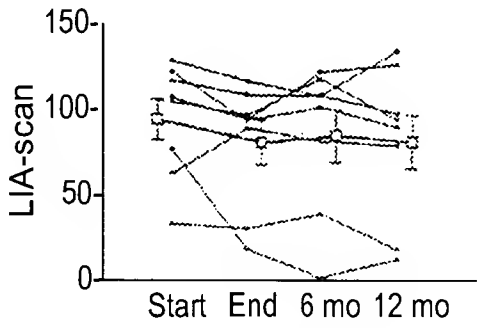


Fig. 35B-2

Core 2 Ab NR

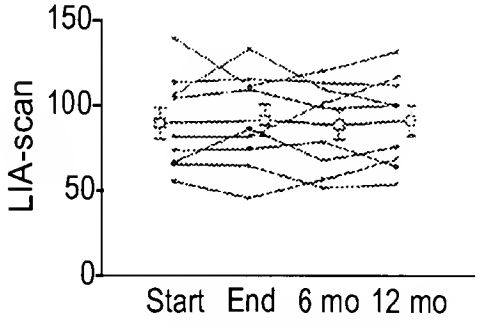


Fig. 35B-3

Core 2 Ab LTR

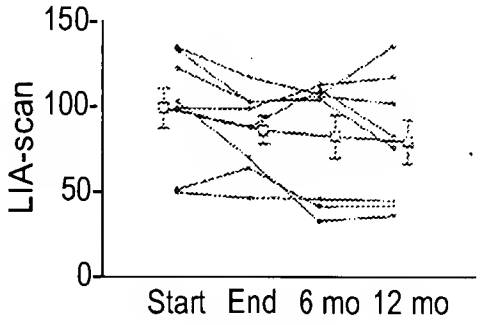


Fig. 35B-4

E2HVR Ab NR

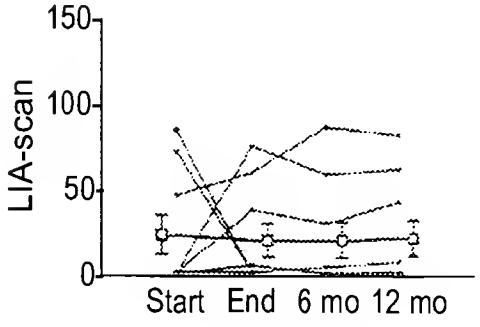


Fig. 35B-5

E2HVR Ab LTR

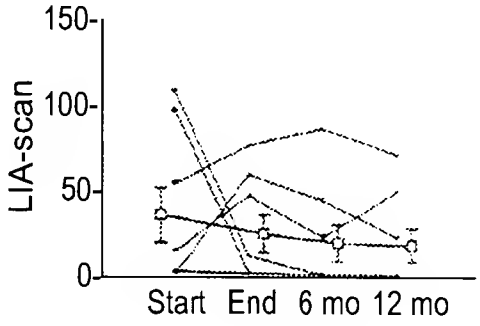


Fig. 35B-6

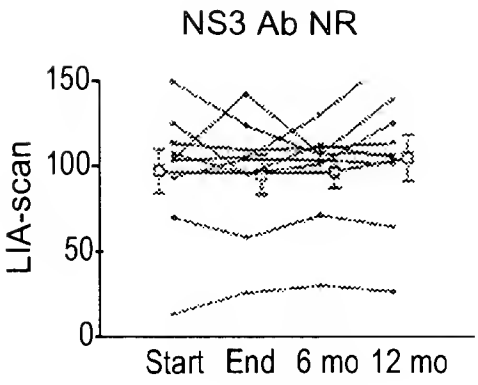


Fig. 35B-7

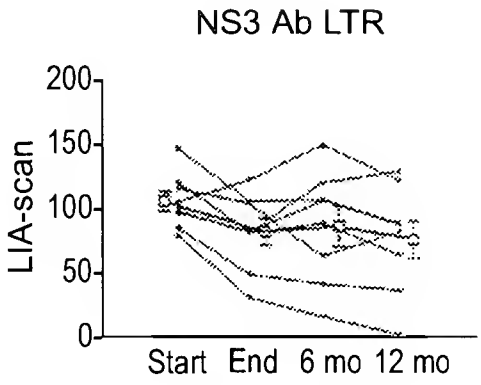


Fig. 35B-8

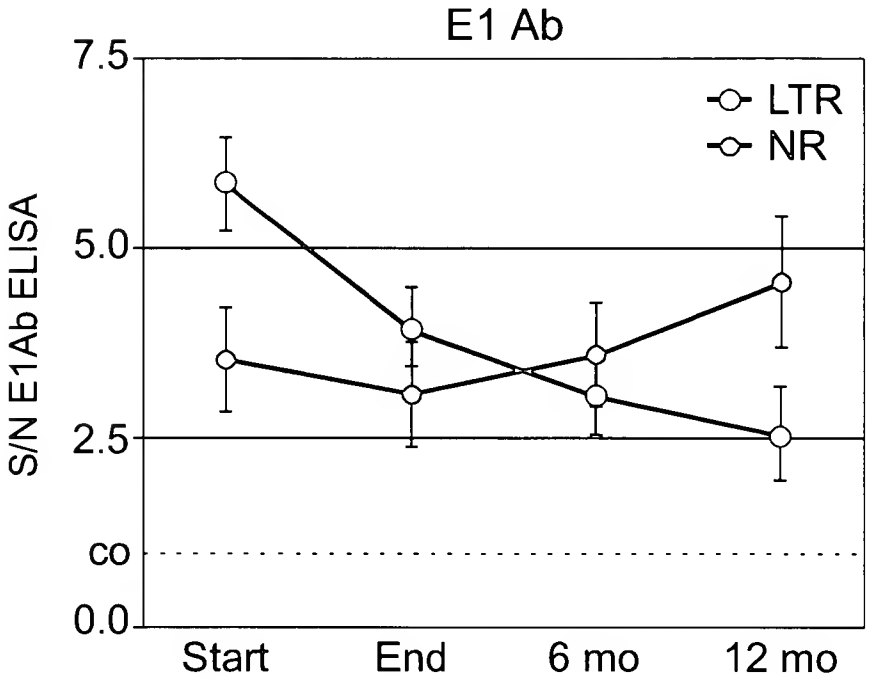


Figure 36A

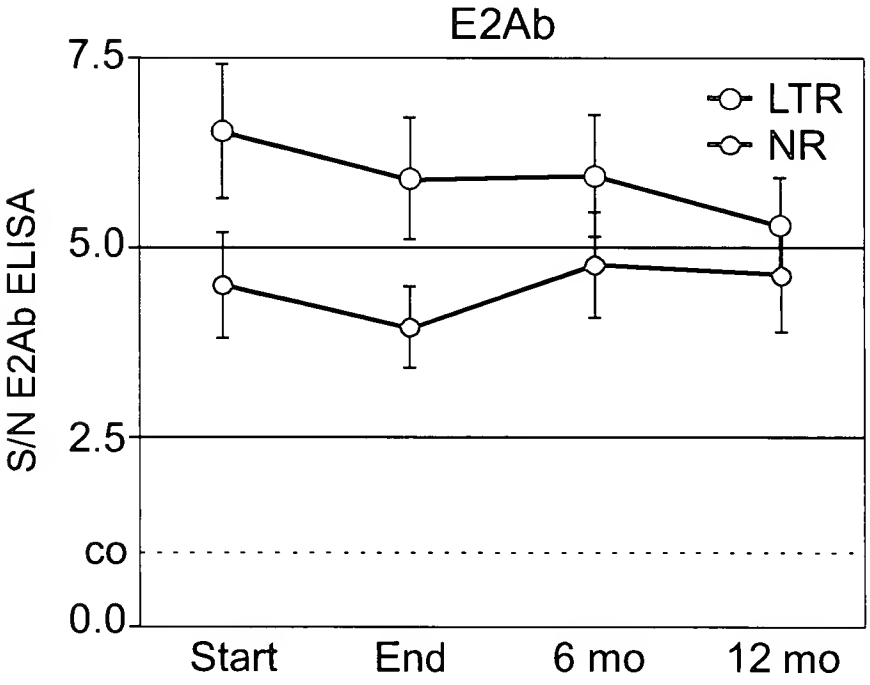


Figure 36B

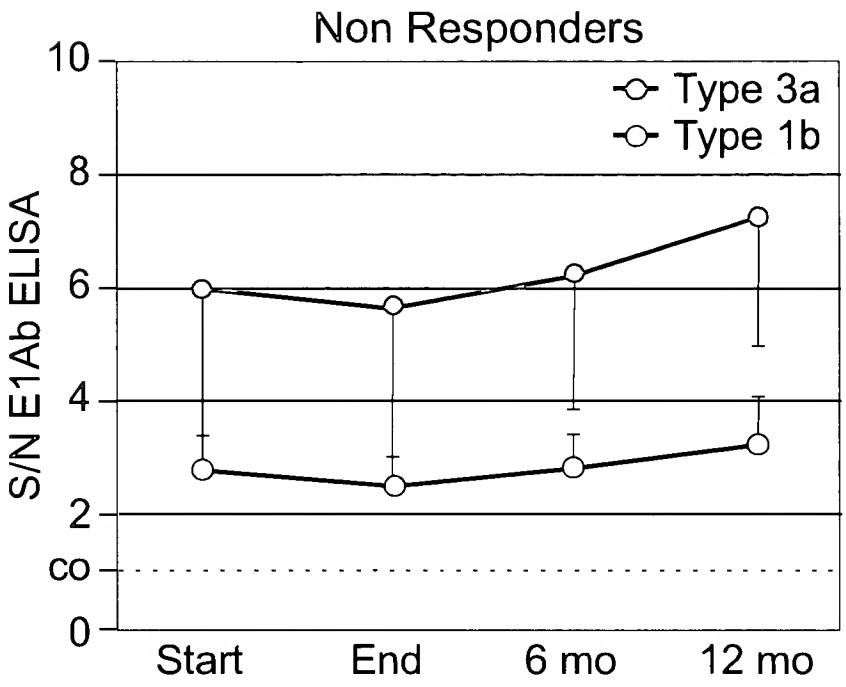


Figure 37A

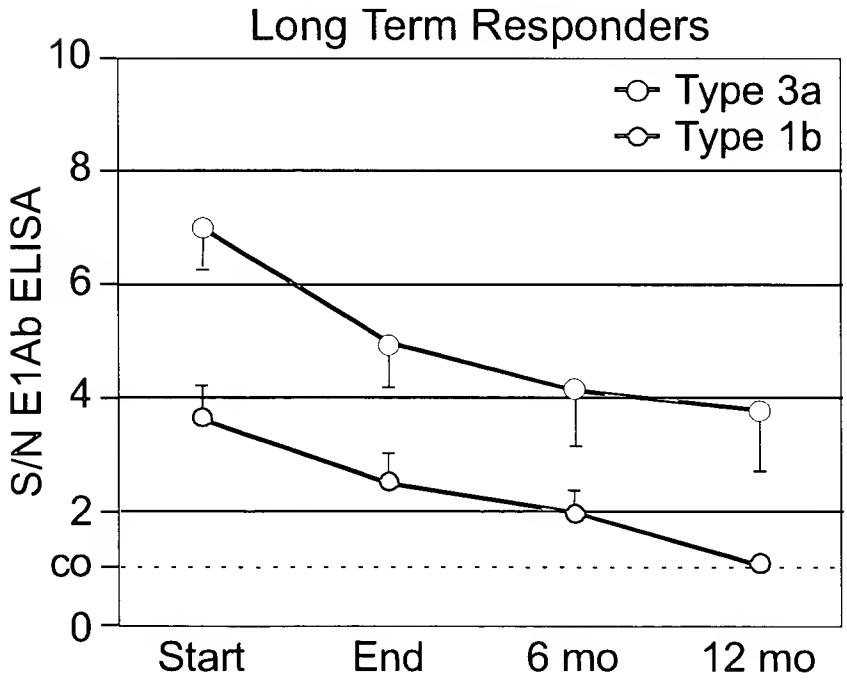


Figure 37B

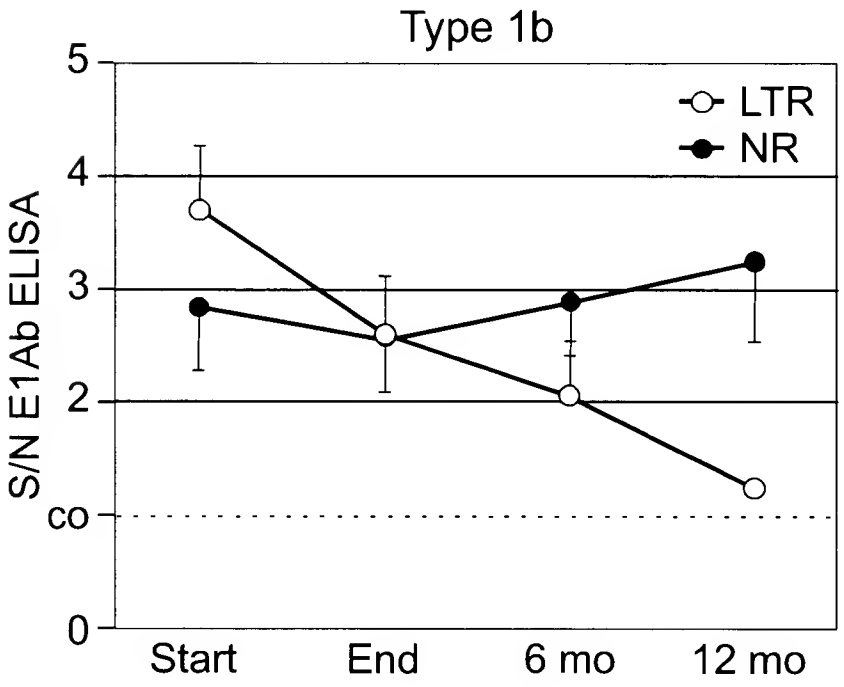


Figure 37C

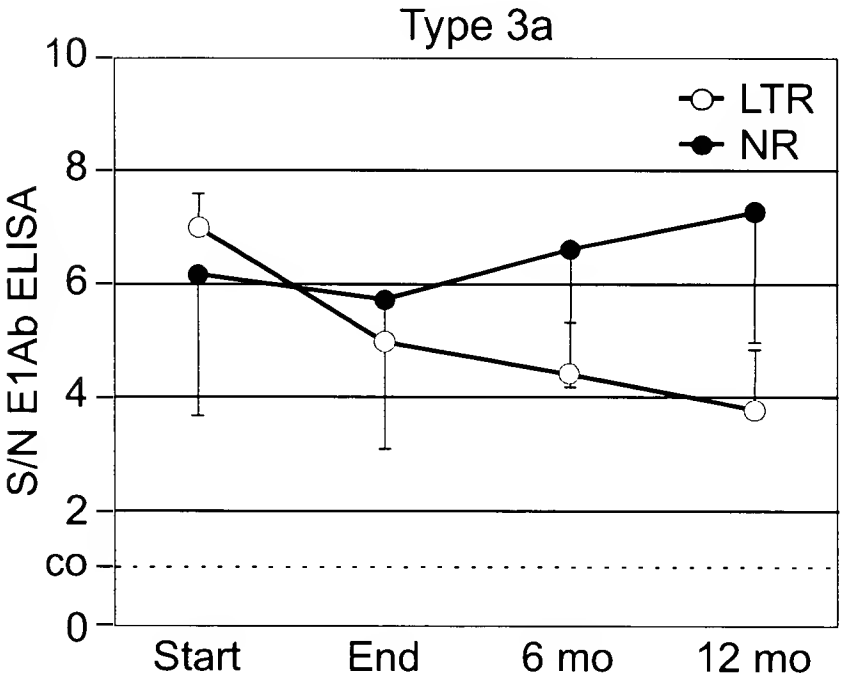


Figure 37D

Relative Map Positions of
anti-E2 monoclonal antibodies

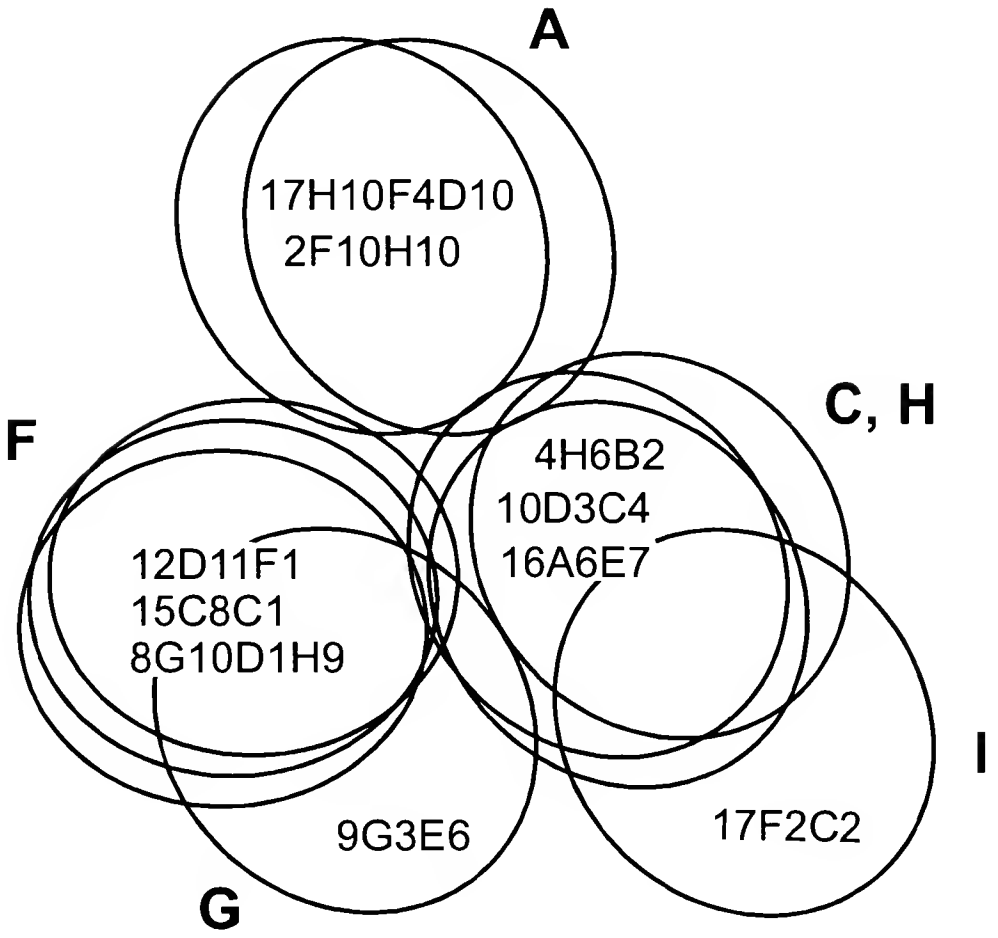
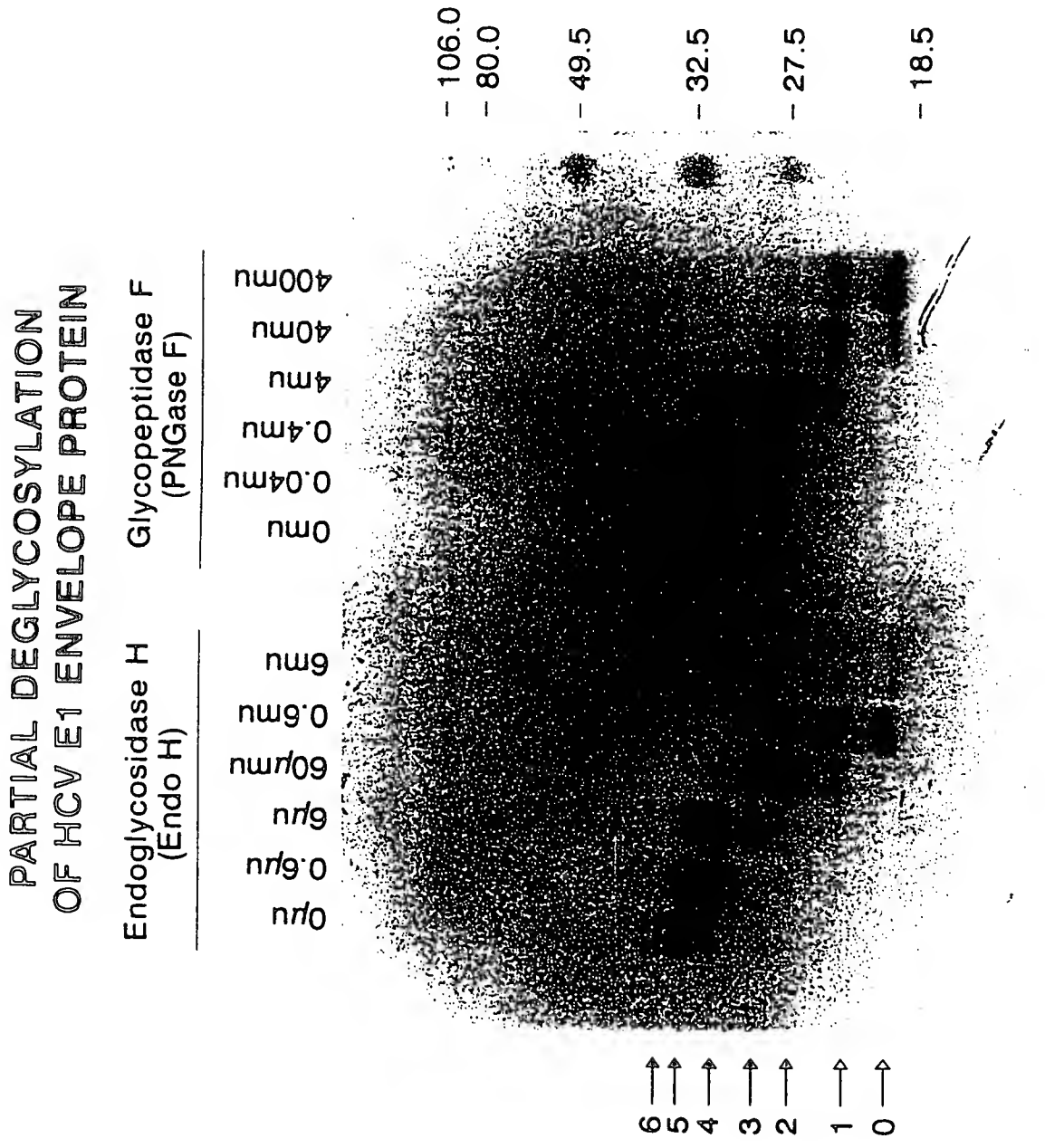


Figure 38

Fig.39



PARTIAL TREATMENT OF HCV E2\E2s ENVELOPE PROTEINS BY PNGase F

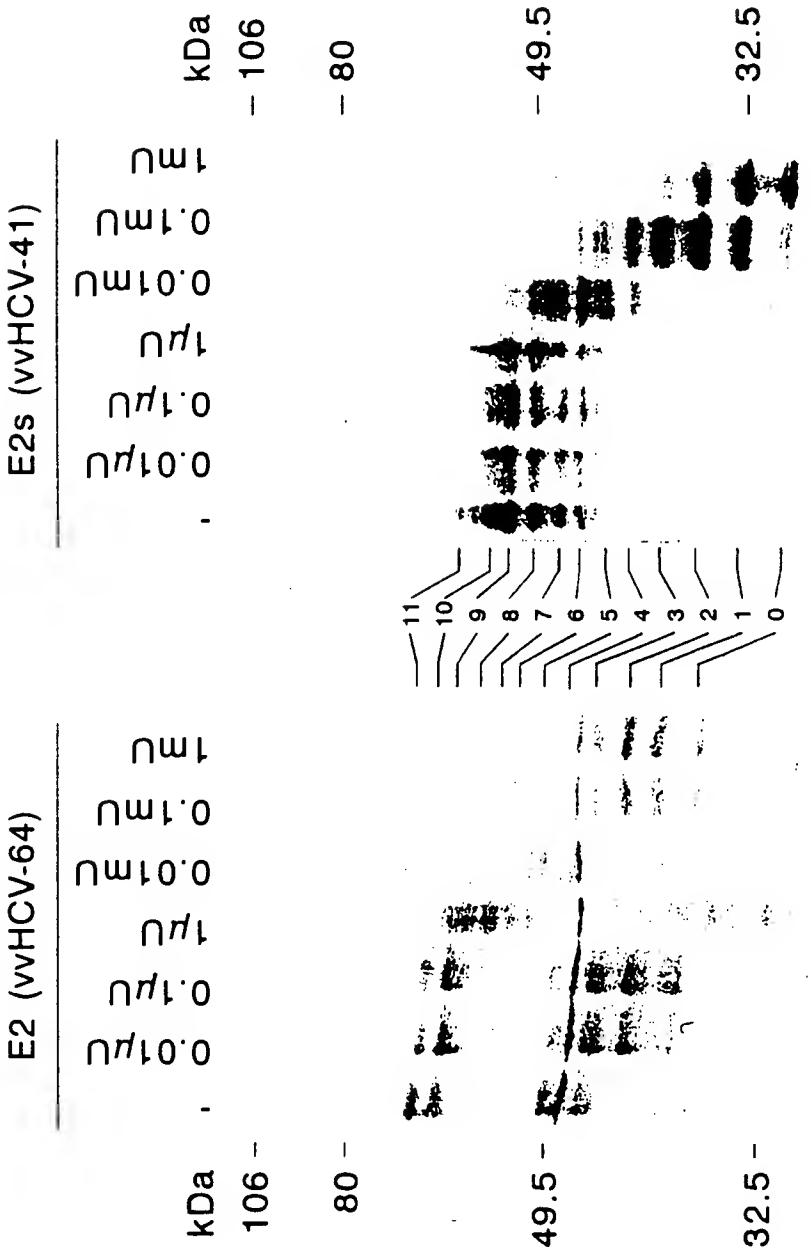


Fig. 40

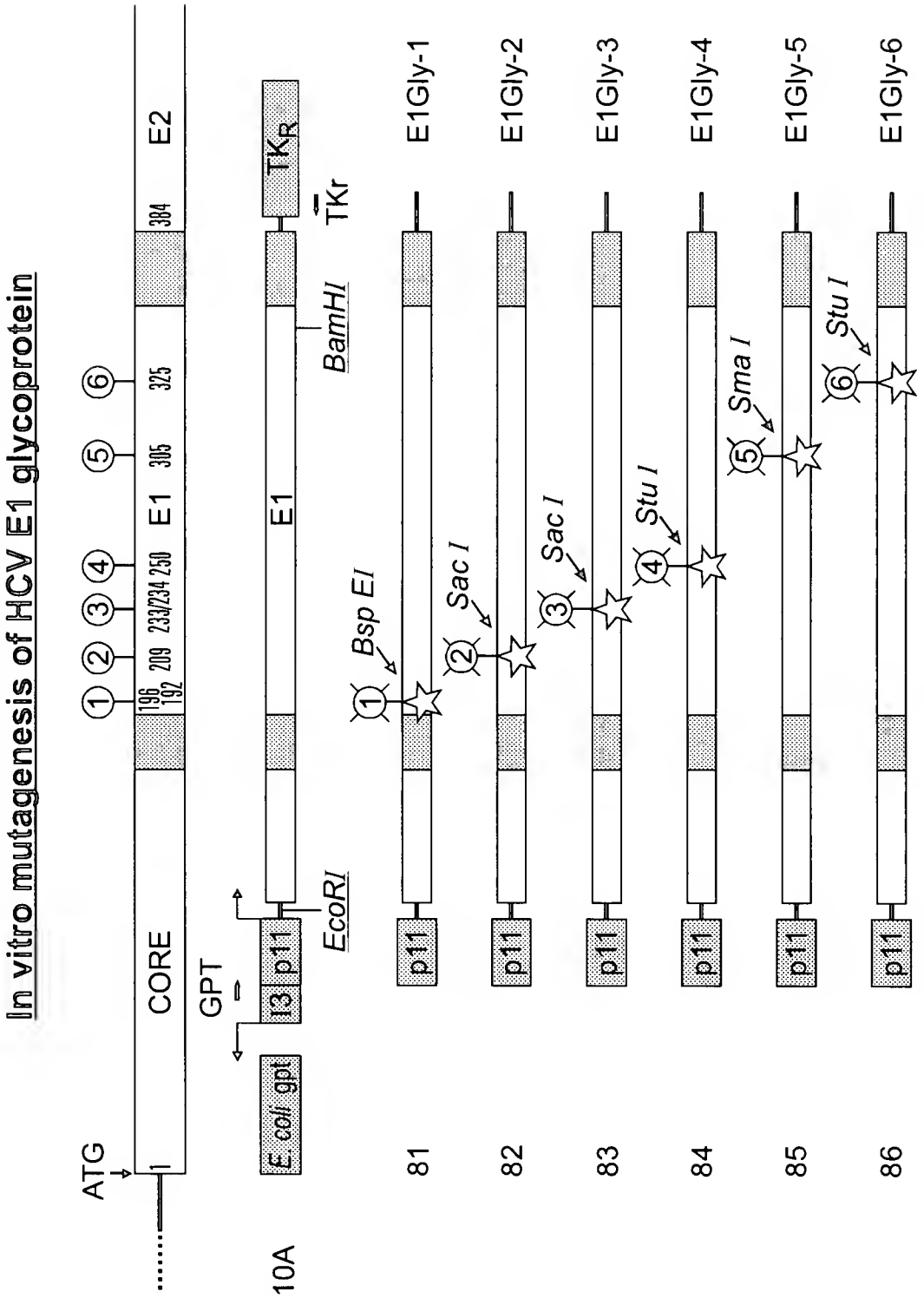


Figure 41

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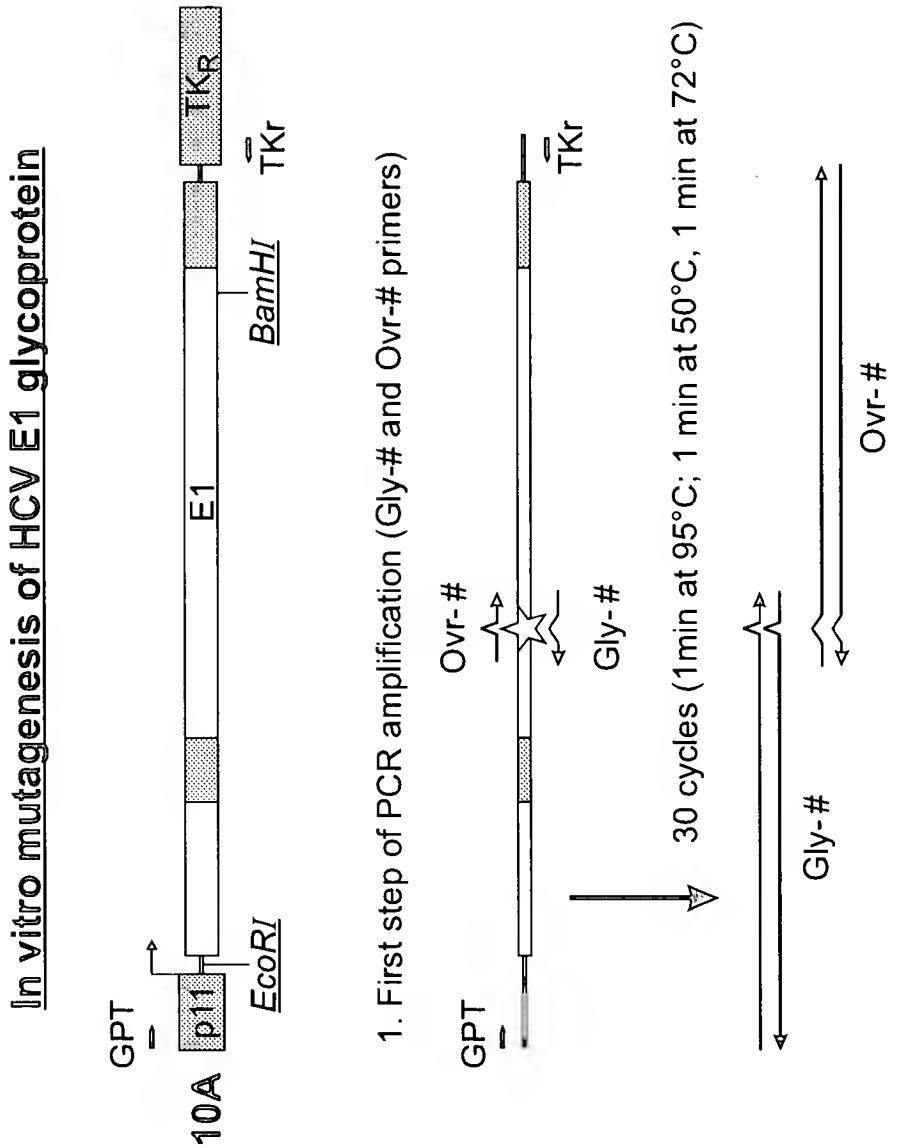


Figure 42A

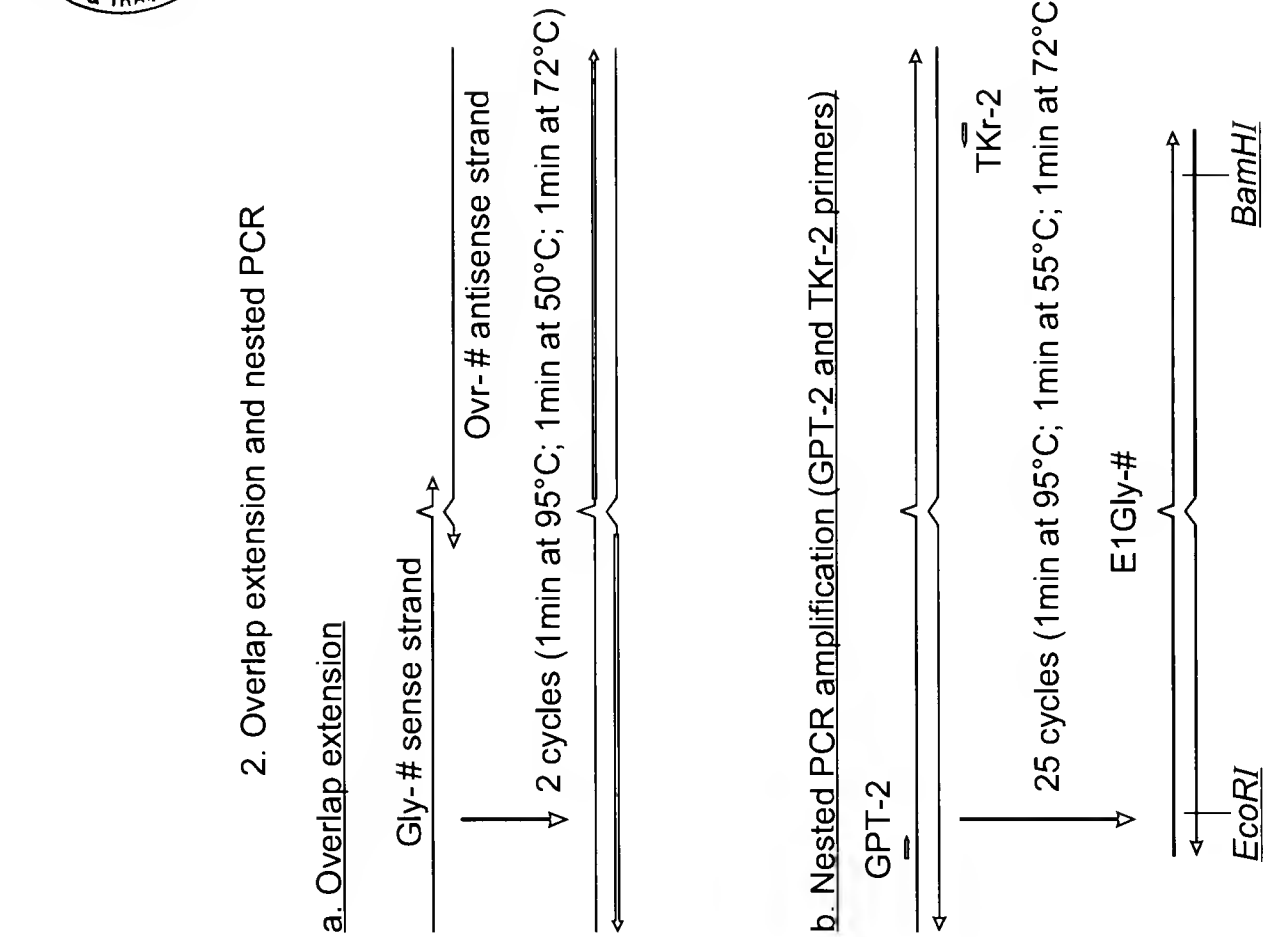


Figure 42B

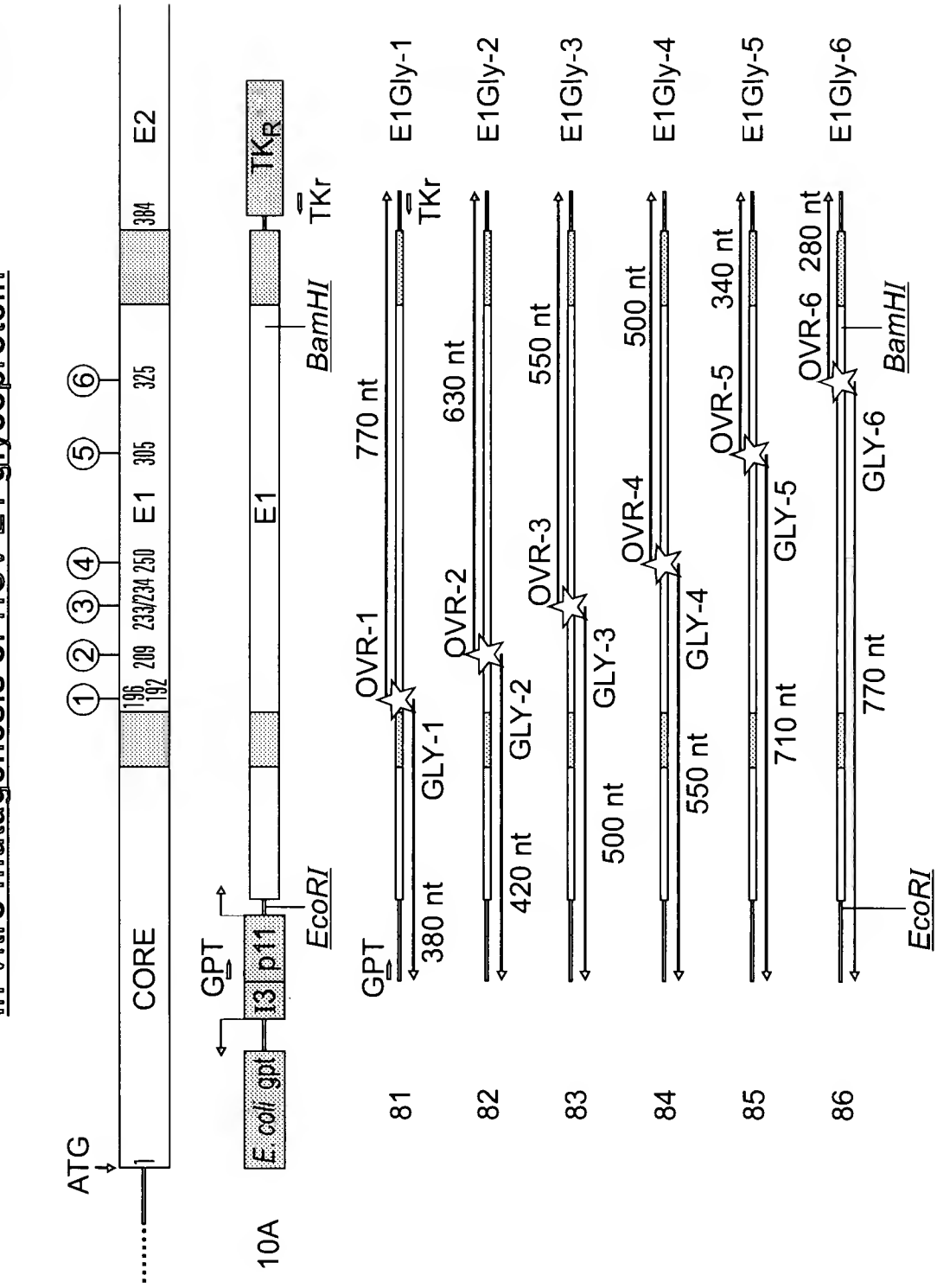


Figure 43

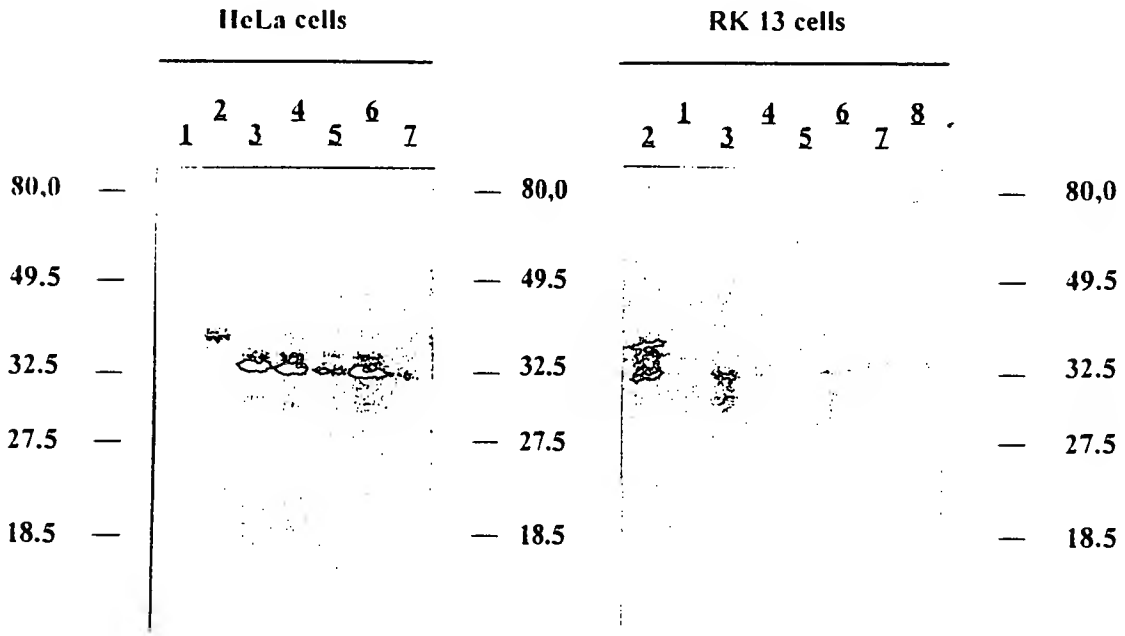


Fig.44A

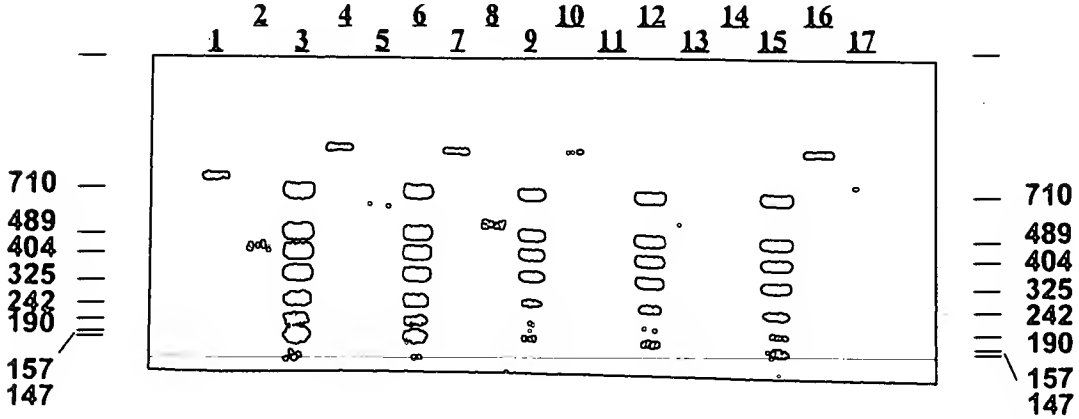


Fig.44B

Fig. 45

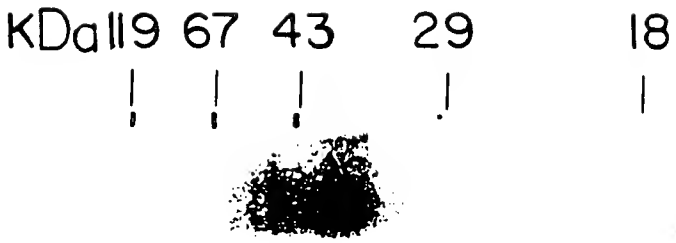


Fig. 46

	age (years)	HCV infection (years)	genotype
Marcel	17	9	1a
Peggy	21	16,5	1b
Femma	15	9	1a
Yoran	12	none	
Marti	12	none	

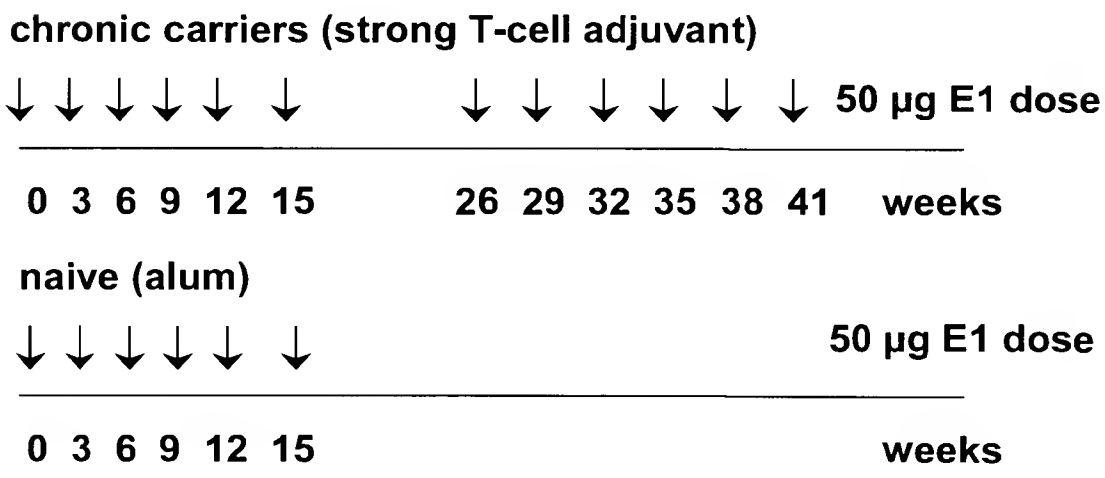


Figure 47

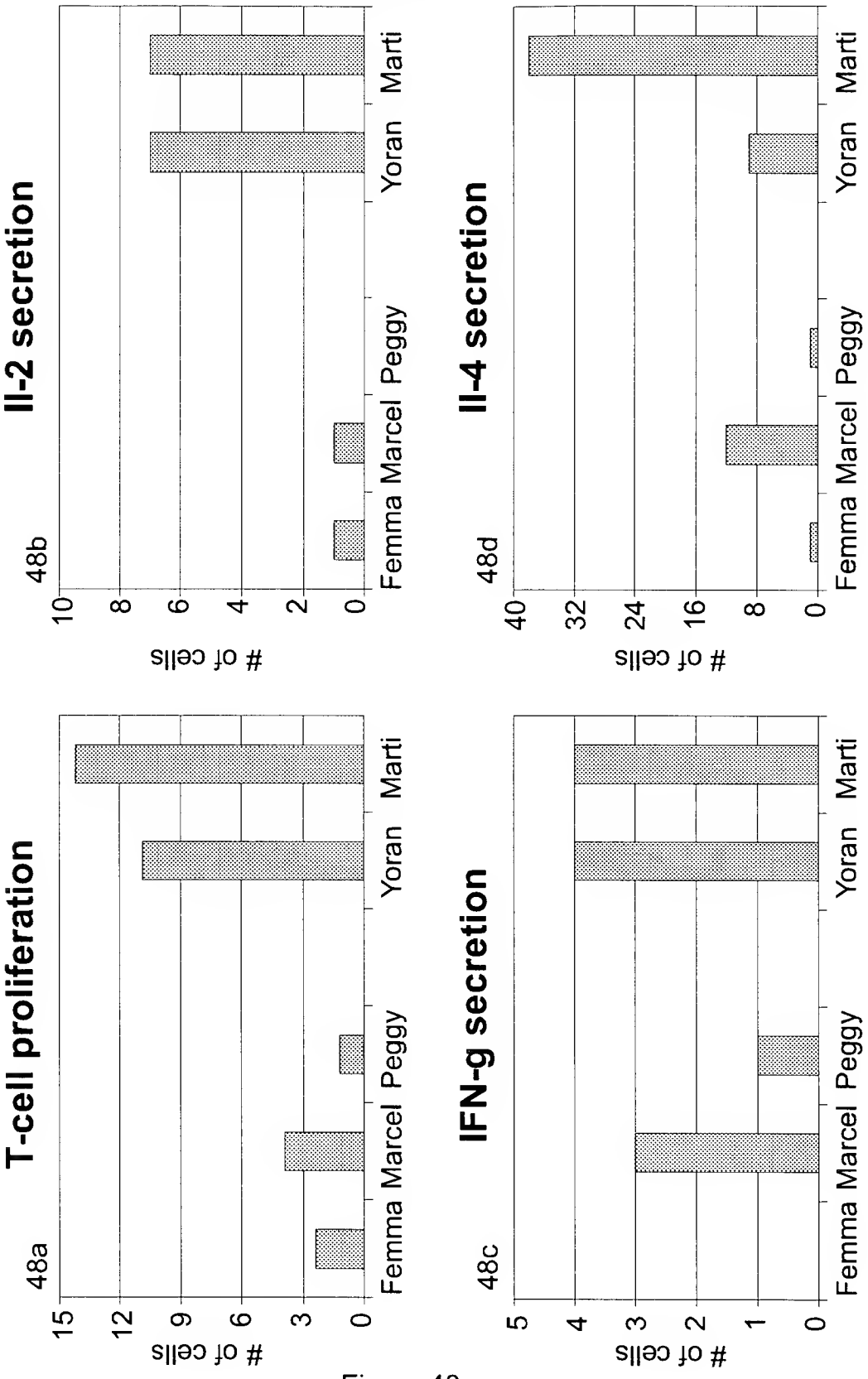
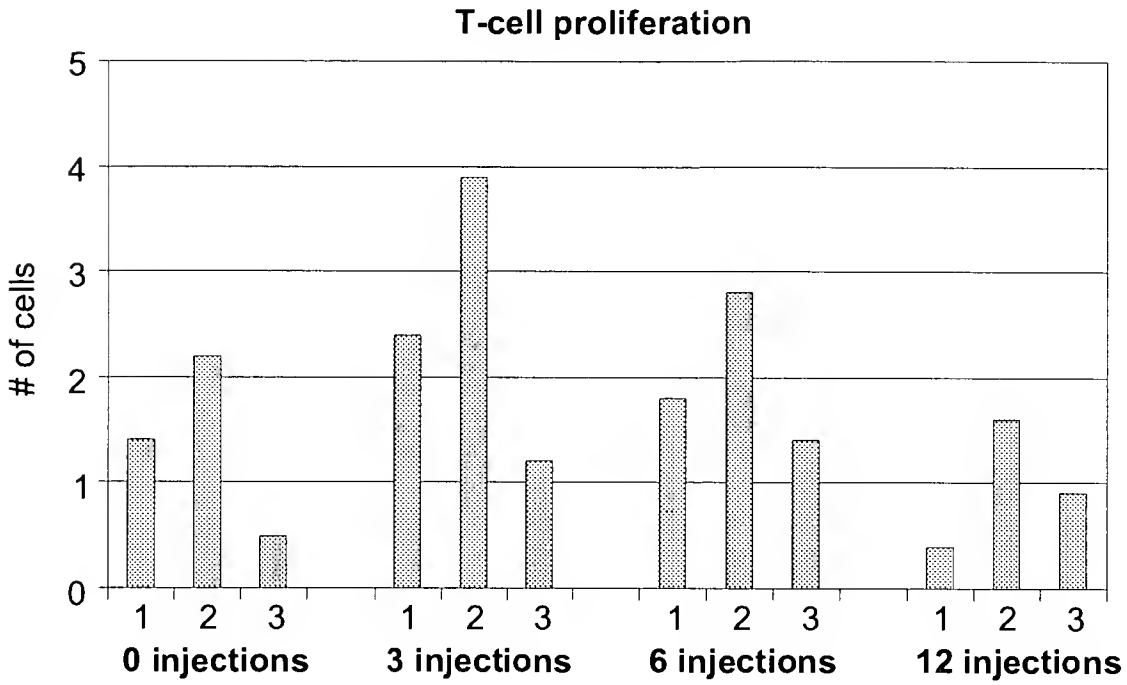
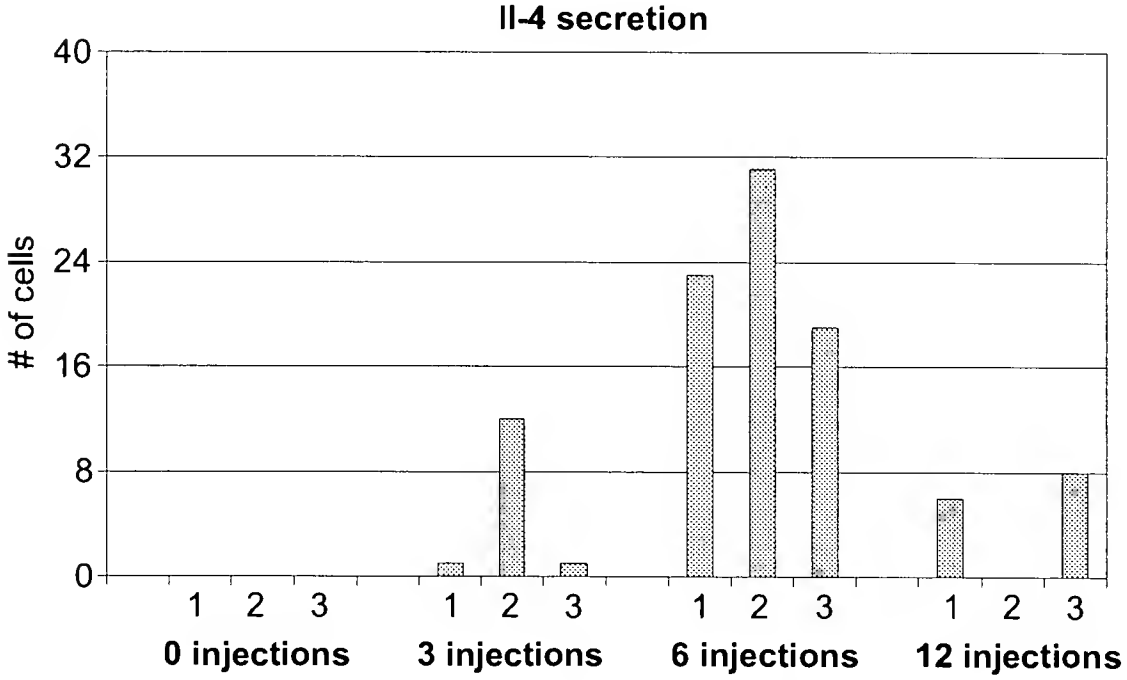


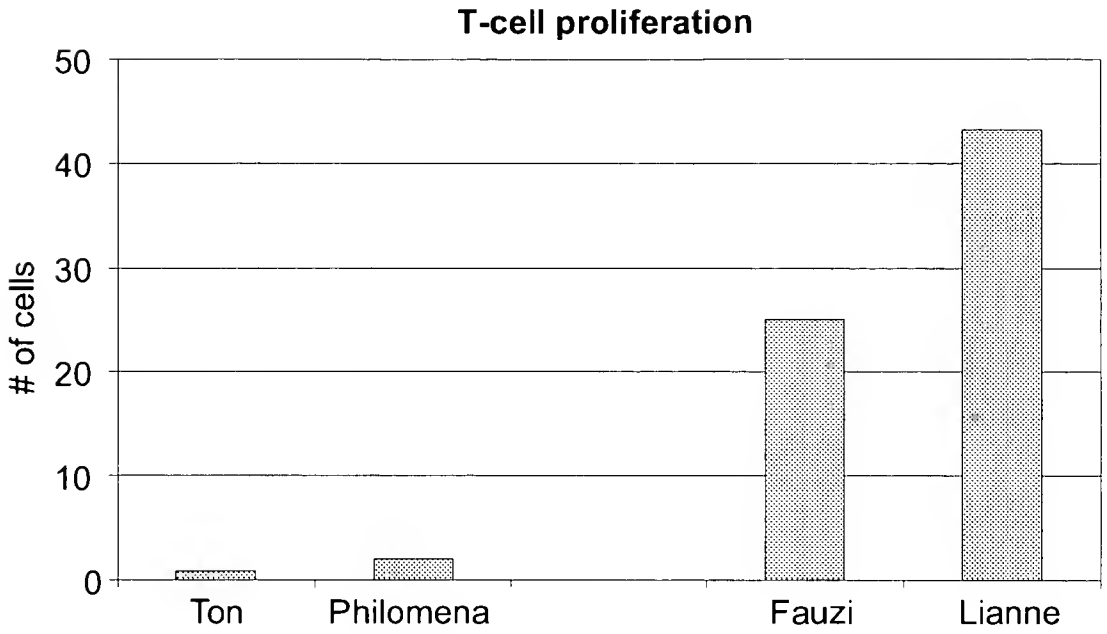
Figure 48





1: Femma, 2: Marcel, 3: Peggy

Figure 49



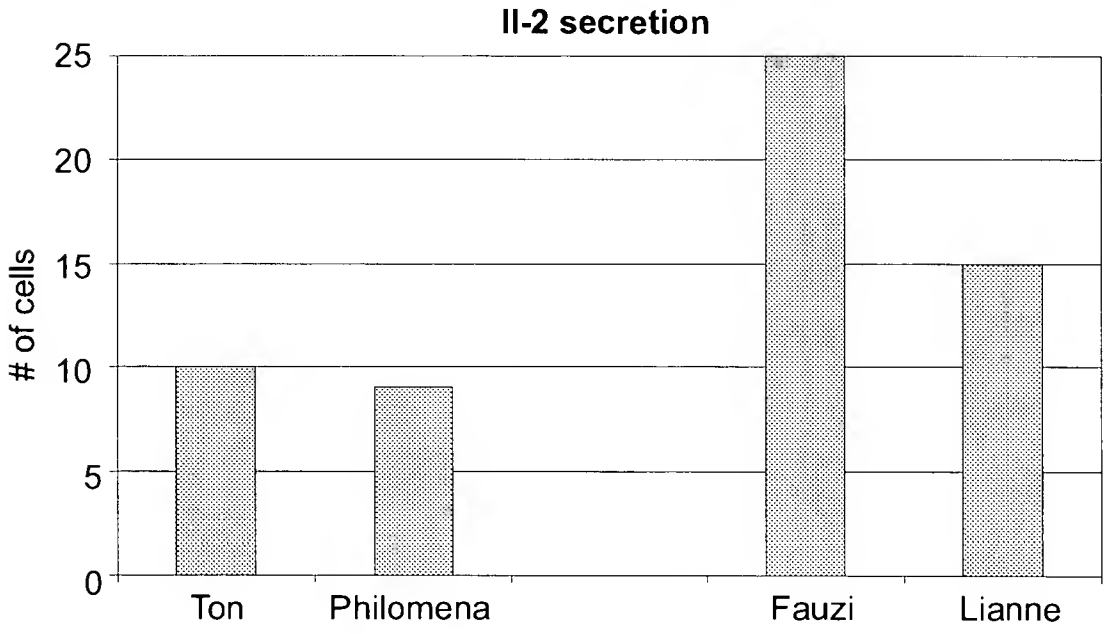


Figure 50

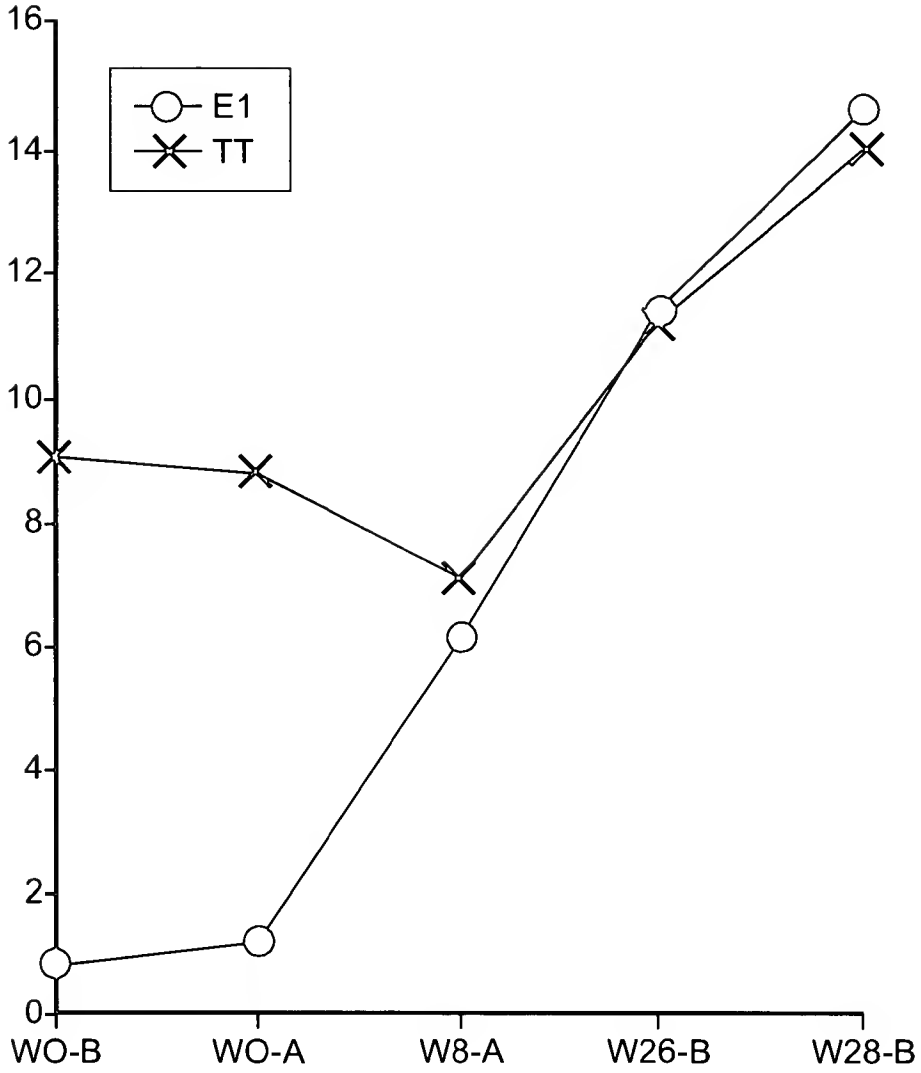


Figure 51

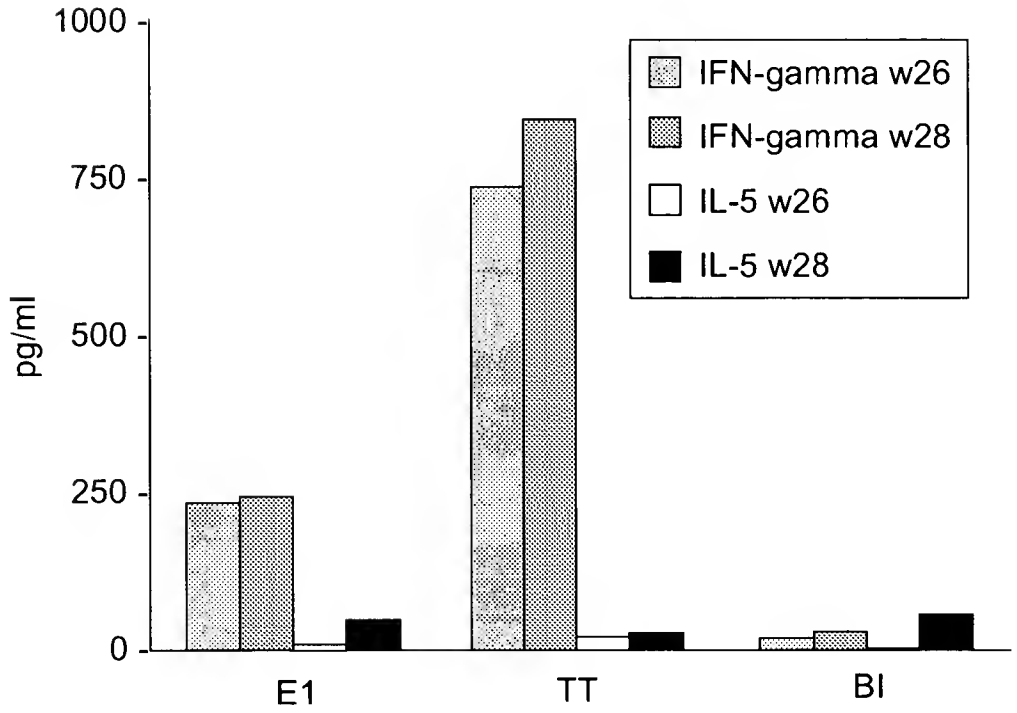
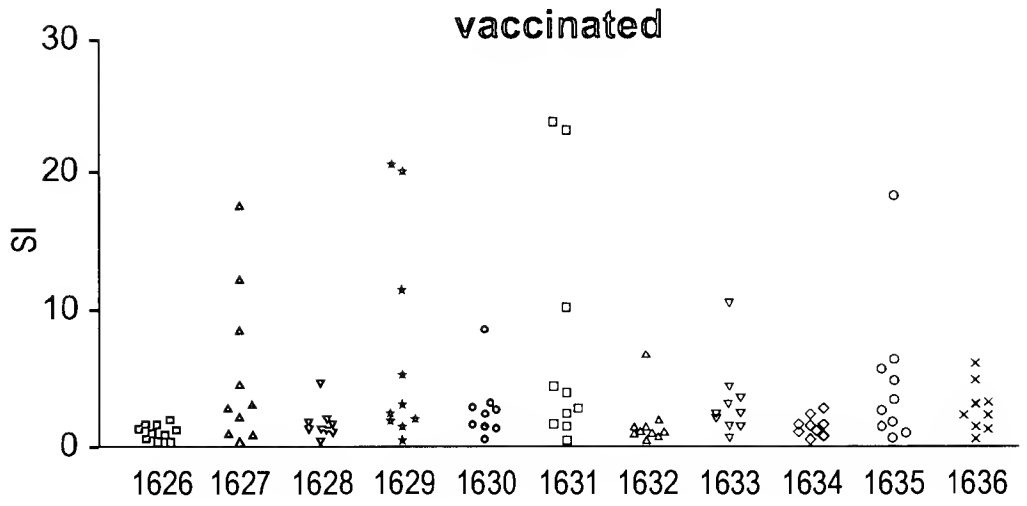


Figure 52



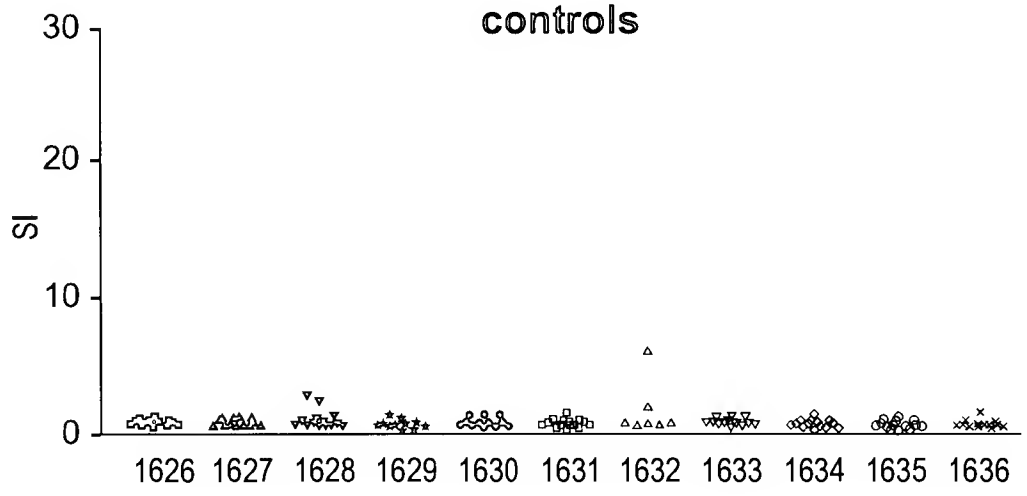


Figure 53